Computer science major is cool again
Survey shows first rise in U.S. undergraduate majors since 2000. **Page 14.**

Skype gets down to business
New service enables Skype client software to connect with corporate IP PBXs. **Page 16.**

NETWORKWORLD

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March 23, 2009 ■ Volume 26, Number 12

Mobile VoIP's future
WiMAX, LTE rollouts could play a key role. **Page 17.**

X-large directory
Directory start-up UnboundID slipped out of stealth mode with a new platform aimed at handling the identity and personalization demands of Web-based services and mobile computing. **Page 30.**

'Net Buzz: A cautionary tale
Don't Tweet with celebrities while you have something on the stove. **Page 34.**

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Network World will only be available as a downloadable PDF next week [March 30]. Surf over to **www.nwdocfinder.com/8734** to get our specially formatted e-dition, featuring the latest enterprise news analysis and expert opinion.

IBM + Sun: How such a union might look

BY JON BRODKIN

If IBM's rumored acquisition of Sun for nearly $7 billion comes to fruition, the combined might of the two would enable the company to play a bigger role in emerging cloud computing markets, solidify market domination in the server business, advance the use of open source software and give IBM more ammunition in its ongoing rivalry with HP. But a merger could also lead to concerns over the future of Java, overlap of products and perhaps even antitrust allegations. Here are 10 topics to consider.

- **Cloud computing.** Both IBM and Sun are potentially big players in cloud computing markets — both as providers of IT services and as providers of server and storage infrastructure used to build clouds. Even as rumors swirled about the potential IBM/Sun acquisition, Sun was announcing compute and storage services to compete against Amazon's Elastic Compute Cloud and Simple Storage Service. But it's the cloud infrastructure piece that might prove most compelling to both companies.

See Acquisition, page 18

NEWSPAPER ■ $5.00

Cisco's blade gambit roils server market

BY JIM DUFFY

Cisco's detractors say the Unified Computing System is a proprietary system that would bind a customer into one vendor.

Cisco's biggest challenge in selling its sweeping new Unified Computing System is to convince the data center managers who buy blade servers to put all their eggs in a single basket — one woven by a router vendor instead of the incumbent server suppliers.

"Server buyers don't have a relationship with Cisco," says James Staten of Forrester Research. "It will be tough to convince them of the need for another player in this market."

Cisco last week finally took the wraps off of its long-anticipated UCS platform, which incorporates internally developed blade servers and is designed to tightly integrate data center computing, storage, networking and virtualization capabilities. The blade server component has been the focus of much industry speculation over the past year, and what it might mean to Cisco's relationships with longtime partners and blade server makers HP and IBM.

Cisco acknowledges that it will now compete with those titans in the data center blade server market. But it also claims it had no choice — and that those trying to pit Cisco and UCS directly against HP and IBM blade servers are missing the point.

"We focus not on competition, but where the market is going," Cisco CEO John Chambers said during last week's launch. "This is the future of the data center. It will evolve into clouds and change business models forever."

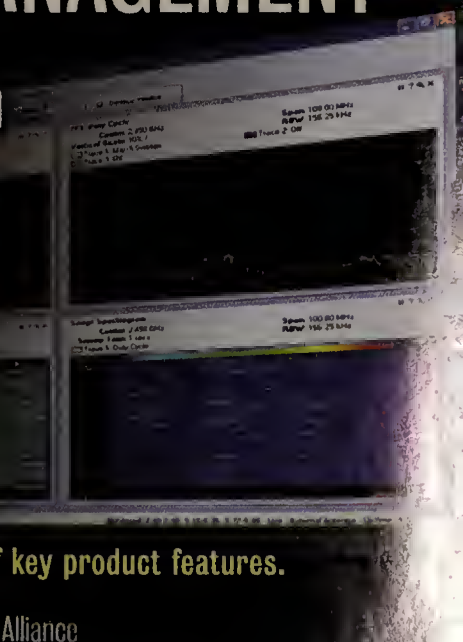
While tongues were wagging over the past year about Cisco's entry into the blade

See Cisco, page 12

NETWORKWORLD CLEAR CHOICE WLAN MANAGEMENT

Low-cost wireless spectrum analyzers are up to the task

■ Cisco, Fluke, AirMagnet (all based on Cognio code) are top performers in our seven-product shootout. For as little as $400, IT managers can deploy effective tools to analyze sources of interference in your wireless LANs. **PAGE 24.**



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www.nwdocfinder.com/9235
Craig Mathias, Network World Lab Alliance

THINK

Conversations for a Smarter Planet

A mandate for change is a mandate for smart.

The world is ready for change – that much is clear.

For leaders of all kinds, this moment presents a rare opportunity. Our planet is not just getting smaller and flatter. It is also becoming smarter.

That is, intelligence is being infused into the way the world literally works – into the systems, processes and infrastructure that enable physical goods to be developed, manufactured, bought and sold. That allow services to be delivered. That facilitate the movement of everything from money and oil to water and electrons. And that help billions of people work and live. This means we actually have the potential to change the way the world works.

That's good news, because the systems by which the world works today are increasingly unsustainable. They may be networked, but it turns out that being connected isn't enough.

It isn't enough to prevent us from wasting too much energy. From spending too much time in traffic. From producing food too expensively and wasting too much of what we produce. From missing too many sales opportunities and disappointing too many customers because of inefficient supply chains. From making too many medical errors and spending too much to provide healthcare for too few. And most obviously of late, from failing to manage financial risk.

Now, with computational power being built into things we wouldn't recognize as computers, any person, object, process or service and any organization, large or small, can become digitally aware, connected and smart. Consider the changes already under way.

Smart traffic systems are helping to reduce gridlock by 20%, cutting pollution and increasing ridership on public transit.

Smart food systems based on RFID technology embedded into supply chains are monitoring the flow of meat, poultry and other items – from the farm to the supermarket shelf.

Smart healthcare systems are helping to lower the cost of therapy by as much as 90%.

Police departments are correlating street-level information from myriad observations and devices to identify crime patterns – helping prevent crime rather than simply punishing it.

The list is long and the transformation is just beginning. Its benefits will be reaped not only by large enterprises, but also by mid-sized and small companies – the engines of economic growth everywhere – and by individuals and communities around the world.

Imagine how a smarter planet will transform the ways we pursue everything from economic growth to societal progress to environmental sustainability to cures for disease, as well as the ways we interact with each other and with the world.

The opportunity is before us, and the moment will not last forever. The question is, will we seize it? As we look to stimulate our economy and rebuild our infrastructure, will we simply repair what's broken? Or will we prepare for a smarter future?

Let's build a smarter planet. Join us and see what others are thinking at **ibm.com**/change

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Mediterranean Shipping Company has discovered a new form of energy.

Mediterranean Shipping Company (MSC) is the second-largest container ship line in the world, with a database that tracks more than 210 billion transactions a year. The company recently upgraded its database to Microsoft® SQL Server® 2008, not only to handle this massive load, but also to simplify MSC's database administration and help ensure high availability. Which is like a new form of energy for MSC. See the whole story at **SQLServerEnergy.com**

To get the full MSC story on your phone, snap a picture of this tag. (Requires a free mobile app from *http://gettag.mobi*)

Microsoft
SQL Server 2008

3•23•09

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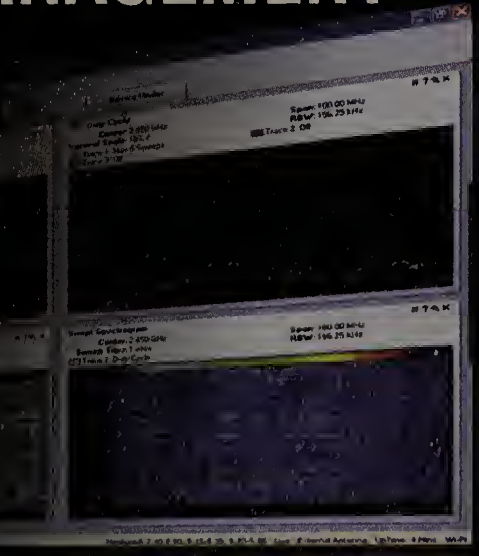
NETWORKWORLD CLEAR CHOICE

WLAN MANAGEMENT

Low-cost wireless spectrum analyzers are up to the task



■ Cisco, Fluke, AirMagnet (all based on Cognio code) are top performers in our seven-product shootout. For as little as $400, IT managers can deploy effective tools to analyze sources of interference in your wireless LANs.

GO ONLINE for a slideshow of key product features.
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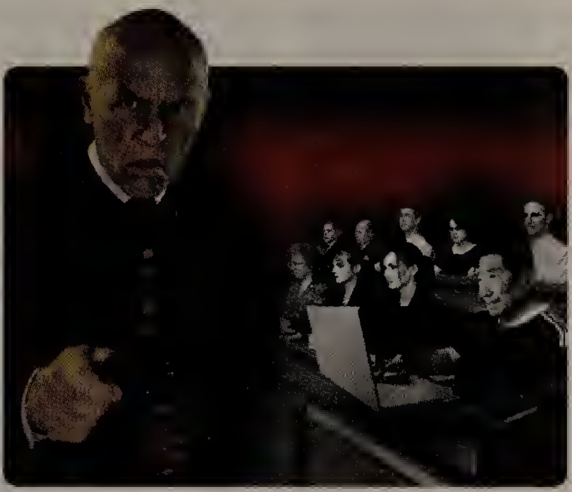
Craig Mathias, Network World Lab Alliance

GOODBADUGLY

Silver lining for Linux

Interest in Linux is accelerating because of the downturn in the economy, according to a study by IDC that was sponsored by Novell. More than 72% of the 300 IT executives who responded to the survey said they are actively evaluating or have already decided to increase adoption of Linux servers in 2009. On the desktop, 68% say they are evaluating or have decided to increase adoption of the open source operating system. The top reason for migrating to Linux is economic and driven by the need to lower ongoing support costs, according to the survey. Of the respondents, 49% said Linux would be their primary server platform in five years.



Web courts trouble

A trend is emerging in which mistrials are being called on account of jury members doing research about their trials on the Internet even though judges order them not to do so. A federal drug trial in Florida earlier this month was declared a mistrial as a result of such impropriety, according to a *New York Times* report. In another case, a jury member allegedly Twittered details about a case while the trial was ongoing.

IT cheapskates

Economic conditions have caught up with IT shops in a big way, and two financial analyst firms have new IT spending forecast data to prove it. Goldman Sachs and IHS Global Insight separately released findings that point to a bigger decline in U.S. IT spending this year than previously expected. Goldman Sachs has revised its global 2009 spending forecast downward from -4% to -9%, citing declining revisions from key indicators such as capital spending, corporate profits and the firm's most recent IT Spending Survey results. IHS Global Insight last week released data that the forecasting company says indicates the U.S. economic crisis will cause a nationwide "IT recession" lasting until the third quarter of 2010, with hardware spending lagging behind perhaps until 2012.

IT grads need a reality check

Re: Network skills in demand, pay well in down economy (www.nwdocfinder.com/9231): *Further response to tcmehrtens, and others with the same mindset:* Everyone has heard the advertisements, "Are you making less than 50k a year? Then Joe's Technical Institute is just for you!" Not many graduate and immediately make over 50k in the IT industry.

That's because college doesn't prepare you for the daily rigors of the IT industry, and if you didn't take the time to find an internship while you were in college, then you probably lack the necessary motivation. These sales pitches overinflate prospective IT pros' egos and expectations and should be widely condemned by the IT industry. I agree with the suggestion to try contracting to get your foot in the door or interning, but it's not that companies are not willing to hire interns, the problem is with the interns themselves.

I've brought these interns in the door only to find that they think working on an access database or hardware inventory is "beneath them" and they should immediately be put in charge of a "Cisco Multilayered Switched Network" or a nationwide "Active Directory Forest." You've got to start with the basics before someone is going to put you in charge of the company's infrastructure.

Chip

Software's future cloudy in IBM/Sun deal

Re: IBM/Sun deal won't be about the software, experts say (www.nwdocfinder.com/9227): IBM is a services company and Sun is a hardware company with assumed identity of software ownership, which is not a good fit for its culture and now the combined two will offer a powerful services company that also builds good hardware. Software in this case will be sacrificed.

Anon

No clear rules in botnet battle

Re: Kraken the botnet: The ethics of counter-hacking (www.nwdocfinder.com/9228):

On one hand, I agree with the first poster in justifying some means to clean these computers of the botnet software (if that is even possible without a disk reformat). For the most part, the owners of these computers have obviously lost control of them anyway by the very fact that they are really "owned" by the botnet software/controllers and not the person sitting at the computer. So, any argument about the potential of "trashing" the computer have no merit — the computers are already trashed!

On the other hand, given our legal system, "no good deed goes unpunished". So, I understand the comments that citizen vigilantism should not be encouraged. On this side of the argument, all the information about the botnet should be handed off to the authorities/police (FBI?), who should be actively taking down the botnet. Perhaps they already have? So, where's the article about this? Why have we not read about the police (FBI?) raid on this botnet, and the subsequent cleaning/repair of all these botnet computers?

If there are no laws and/or no law enforcement (aka police), that unfortunately leaves us with vigilantes, or doing nothing. Which is worse — the disease or the cure?

Anon

All Cisco, all the time?

Re: Cisco says it considered HP, IBM for blade server (www.nwdocfinder.com/9229):

Speaking as a CIO, why would I want to put all my eggs in one basket for my server environment? I lose all leverage in getting good pricing, I make myself vulnerable to something that affects Cisco "computers," etc.

Then putting on my government hat, why would I create an environment that forces me to do sole source procurements?

So I really can't see this getting a lot of traction. Of course, Cisco has the bucks to try and make this work so time will tell.

Anon

E-mail letters to jdix@nww.com or send them to John Dix, editor in chief, Network World, 492 Old Connecticut Path, Framingham, MA 01701-9002. Please include phone number and address for verification

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BLOGOSPHERE

Tweeted out of a job. The Cisco Subnet reported that Twitter was all a-tweet with a recent exchange between a prospective Cisco hire and another Cisco employee. The first wrote (the tweet has since been deleted): Cisco just offered me a job! Now I have to weigh the utility of a fatty paycheck against the daily commute to San Jose and hating the work. The tweet was seen by a channel partner advocate for Cisco, who tweeted back: "@theconnor Who is the hiring manager. I'm sure they would love to know that you will hate the work. We here at Cisco are versed in the Web." The career-limiting faux pas has been immortalized with its own "Cisco Fatty" Web site.
www.nwdocfinder.com/9232

A depressing mixture? The Microsoft Subnet reviewed highlights of the Mix09 conference in Las Vegas, where the focus was on the introduction of Internet Explorer 8. But there have been other happenings of note, including a focus on Silverlight 3. However, most important has been the presence of an upbeat attitude. Bill Buxton, principal researcher at Microsoft Research, said that the tough economic conditions don't matter — the need for strong design is as important as ever. What I like is that he pointed to examples of great design that happened right as the Great Depression was starting — things like the Coke bottle and a pocket Kodak camera. These things survived the depression and thrived.
www.nwdocfinder.com/9233

Rootkit code to exploit major Intel chip flaw to be posted 3/19/09. Jamey Heary writes on his blog that "this is the scariest, stealthiest, and most dangerous rootkit I've seen come around since the legendary Blue Pill! Security researchers Joanna Rutkowska and Loic Duflot are planning to release a research paper plus exploit code for a new System Management Mode rootkit that installs via an Intel CPU caching vulnerability. The heart-stopping thing about this particular exploit is that it hides itself in the SMM space. So why would they release the exploit code to the public you ask. Aren't security researchers supposed to play by the rules and refrain from disclosure? Well here's the thing, both the CPU caching vulnerabilities and the SMM vulnerabilities already have been reported to Intel. Rutkowska reports that the first mention of this possible attack was discussed as early as the end of 2005 by Intel's own employees.
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IT VIDEO

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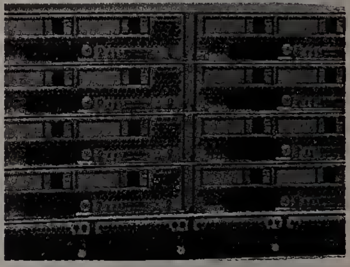
IDG NEWS WIRE:

Flying car makes world debut

No longer a subject of science fiction, a car that can fly like a regular airplane — but then land, fold up its wings and drive away — debuted in Boston Wednesday.
www.nwdocfinder.com/9225

IDG NEWS WIRE:



Cisco's UCS: A closer look

Cisco, with a crowd of partners, introduced a data center architecture last week that it says will make IT infrastructure simpler and more efficient.
www.nwdocfinder.com/9226

BEST OF NWW'S NEWSLETTERS

Virtual applications earn an A+ at this 'laptop school'

Tech exec: St. Agnes Academy is one of the premier college preparatory schools in Houston. The all-girls school is known for excellence not only in what it teaches, but how it teaches. Far ahead of its public school counterparts, St. Agnes is known in the education community as "a laptop school." Each of the 860 students carries a laptop or tablet PC to class instead of lugging a heavy backpack full of textbooks around. At the beginning of the school term, the students download the books and software applications they need onto their laptops. Everything is set up as virtual applications that can be downloaded in minutes. This allows the students to get access to their course materials anytime and from anywhere. So much for the old excuse, "The dog ate my homework." Jason Hyams is the director of IT at St. Agnes. When he came to the academy in 2005, the school already had a wireless environment and the students were using laptops in class. However, the way they used their computers was more a "wired" solution than a truly mobile environment. In class, the students would log into a domain and the hard drives were scripted. The students had access to shared printers. Though the solution worked, the devices weren't really being treated as mobile clients.
www.nwdocfinder.com/9221

Network management: Cisco's Unified Computing System (UCS) launch last week impacted several vendors across the management software market. Not only did BMC announce that its BladeLogic service automation suite would come pre-packaged with Cisco's UCS when it becomes generally available in the second calendar quarter, but EMC also made news with the network equipment maker. According to EMC, the two vendors will expand their existing partnership and further collaborate on testing products for interoperability and developing data center solutions. "EMC and Cisco share a vision that enterprise IT will eventually evolve towards a private cloud model and both companies are committed to working together to achieve this," said Frank Hauck, EMC's executive vice president of global marketing and customer quality. EMC says Cisco's UCS will be integrated with EMC products including management technologies such as EMC Smarts.
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Cisco buying Flip video camera maker

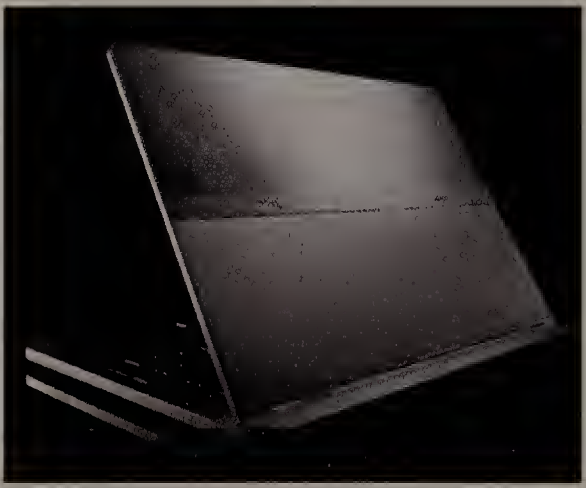
Cisco has announced its intent to acquire privately held Pure Digital Technologies, creator of the Flip video camcorder for consumers, for $590 million in stock. The acquisition is key to Cisco's strategy to expand momentum in the media-enabled home, Cisco said. Upon the close of the acquisition, Pure Digital will become part of Cisco's Consumer Business Group, which includes Linksys by Cisco home networking, audio and media-storage products. "Pure Digital will add to Cisco's arsenal of products aimed at driving increased network bandwidth, similar to Cisco's video conferencing products. As more consumers upload video content to the web, it will also drive demand for Cisco's traditional products-switches and routers," said UBS analyst Nikos Theodosopoulos.
www.nwdocfinder.com/9236

IE 8 released, made available on Web. Microsoft has released Internet Explorer 8, the next version of its Web browser that includes a number of corporate features, such as tools to customize and control the software via centralized policies. In addition, the browser has new privacy and security features and integration with Microsoft's System Center Configuration Manager to ease deployment. The long-anticipated release of IE8 comes as Microsoft is losing small bits of market share to competitors Firefox, Safari and Chrome, and amid rumors that Microsoft is working to replace the browser's rendering engine with a project coming out of Microsoft Research called Gazelle.
www.nwdocfinder.com/9237

Ex-Google, Yahoo staffers release Hadoop distribution. A start-up called Cloudera has publicly released its distribution of the open source Hadoop distributed computing framework, hoping to sell enterprise users on the system employed by Google, Yahoo and others to process large data sets. Cloudera's distribution is available at no charge as an RPM bundle for systems running Red Hat Linux, as well as an image for Amazon's Elastic Compute Cloud. It has three components: the Hadoop distributed file system, which can run on commodity machines; an implementation of the MapReduce framework originally developed by Google for parallel processing of large data sets; and Hive, a data warehousing layer that uses the SQL-based HQL language for querying. Cloudera was launched by former Google, Yahoo, Oracle and Facebook employees last year and offers support services for Hadoop.
www.nwdocfinder.com/9238

ProCurve unveils SMB switches. HP ProCurve unveiled a switch line designed to let small and midsize businesses easily scale and manage a growing gigabit network. The ProCurve 2910 line consists of two 24-port and two 48-port managed Layer 2 10/100/1000Mbps Ethernet switches that include SFP slots for optional fiber uplinks. HP ProCurve also rolled out three 10 Gigabit Ethernet modules for the 24-port 2910 switches so customers can increase bandwidth and attach peripherals as their networks expand. Citing data from Miercom, HP ProCurve says the 2910 line provides 23% energy cost savings when compared with the industry average, based on typical usage cost. The switches are priced from $2,609 to $6,599 and the modules cost $779 to $2,099.
www.nwdocfinder.com/9239

Dell debuts Adamo. Dell last week took the wraps off Adamo, a "luxury" laptop that could be the PC maker's response to ultra-thin laptops including Apple's stylish MacBook Air. Adamo has a light and ultra-slim design that makes it easy to hold with a few fingers. It measures 0.65 inches at its thinnest point, and weighs around 4 pounds with a 13.4-inch screen. The laptop uses new technologies that could make it a speedy machine: It runs on an ultra-low power Intel processor, supports DDR3 memory and includes SSD storage. A battery built inside the laptop provides about four to five hours of run-time per charge.



Prices for the laptop start at $2,000 with a 128GB SSD and an Intel Core 2 Duo SU9300 ultra-low-voltage processor running at 1.2GHz with 2GB of DDR3 memory.
www.nwdocfinder.com/9242

Mobile Firefox aka Fennec hits beta. Mozilla last week posted the first beta release of Fennec, its mobile version of the Firefox Web browser. The Fennec 1.0 beta 1 release is only available for one mobile device, the Nokia N810 Internet Tablet. But beta versions have been released for Windows, Mac and Linux desktop PCs, to let users and developers experiment with the application and start building the all-important Firefox plug-ins. One powerful newly added feature is the TraceMonkey JavaScript compiler, which promises to dramatically speed up many aspects of mobile browsing. Unveiled last summer, TraceMonkey is the same engine used in the latest beta versions of desktop Firefox. The beta version also introduces faster application start-up time; faster panning and zooming; and improved bookmark features.
www.nwdocfinder.com/9241

Time to cut back cell phone use? Nearly 40% of American cell phone users indicated they are "likely to cut back" on their cell phone usage over the next six months if the economy does not improve, according to Opinion Research Corporation. The group's survey also shows that 26% of users with contract-based cell phones feel that they're more inclined to switch to less expensive prepaid plans than they were six months ago. Consumers also figure to cut back on cell phone extras such as text messaging and Internet services. Forty-one percent of users surveyed said they were either very or somewhat likely to cut back on their texting and data usage, while 15% of users surveyed said that they had already cut back on their data services. **www.nwdocfinder.com/9243**

Google adds admin-friendly features to Gmail. Google has rolled out enhancements to Gmail, including the ability to preview some Web links within messages and a feature that lets Google Apps administrators view usage statistics of their Gmail users via the Analytics service. The preview functionality makes it possible for Gmail users to see photos from Yahoo's Flickr and Google's Picasa photo management services, play back YouTube video clips and view information from the Yelp business review site without having to navigate away from the message window. Meanwhile, administrators of Education and Premier accounts of the Google Apps hosted suite can collect and view usage statistics of their Gmail users in the company's Analytics Web monitoring service.
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Cisco

continued from page 1

server market, the company stressed the holistic approach of UCS during its launch, saying its innovations in tying together servers, storage, networking and virtualization make it unique in the industry.

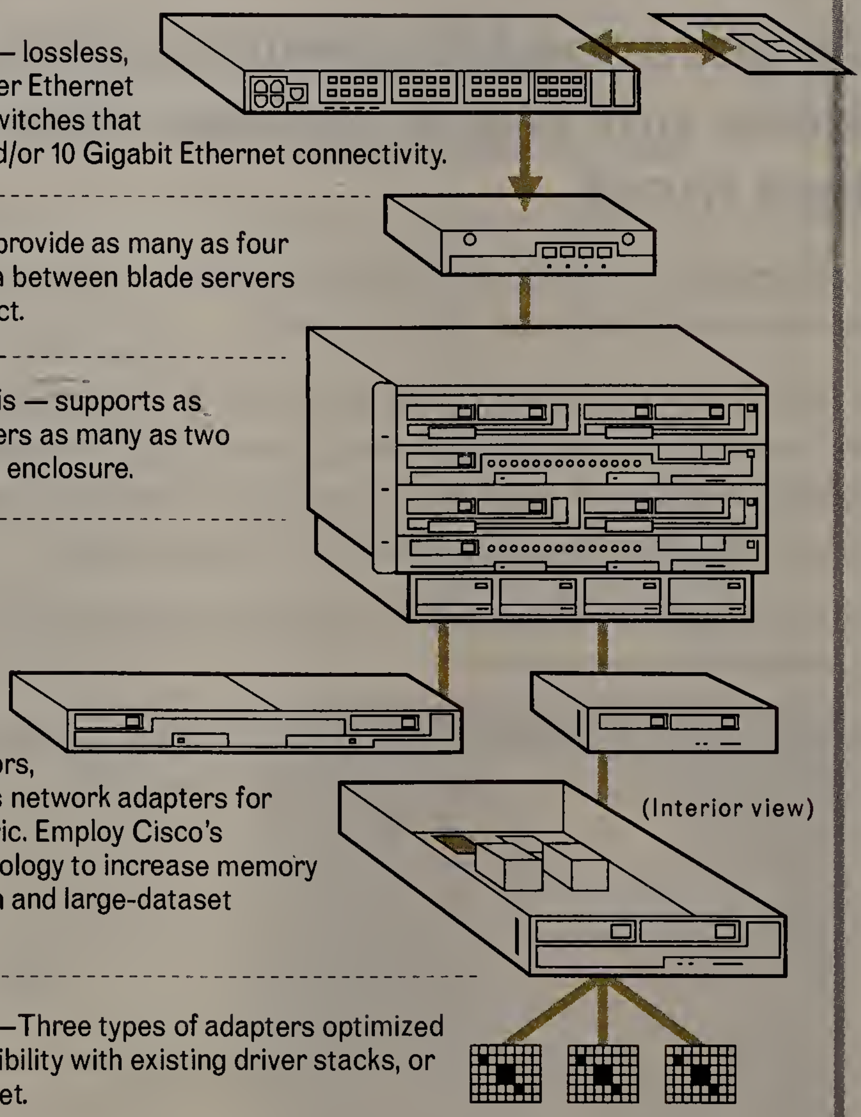
It's not a blade server, company officials insisted; it's an architecture.

UCS is designed to let customers build next-generation data centers that are optimized for virtualized resources — servers, storage, applications and networking. It is intended to manage data center operations as a unified environment and supports applications and services from leading vendors such as Microsoft, EMC, VMware, Red Hat and Novell.

Cisco came up with the unified computing concept three years ago and launched product development shortly thereafter, Chambers said.

Building blocks of Cisco's Unified Computing System

Homegrown blade servers and assorted connectors and adapters are at the heart of Cisco's vision for virtualized data centers that include network, storage and compute resources



UCS Manager – Embedded software that integrates system components; provides centralized management of the United Computing System.

6100 Fabric Interconnect — lossless, 10Gbps Cisco Data Center Ethernet and FCoE interconnect switches that provide Fibre Channel and/or 10 Gigabit Ethernet connectivity.

2100 Fabric Extenders — provide as many as four 10Gbps connections each between blade servers and the fabric interconnect.

5100 Blade Server Chassis — supports as many as eight blade servers as many as two fabric extenders in a 6RU enclosure.

B-Series Blade Servers — based on next generation Intel Xeon processors, each blade server utilizes network adapters for access to the unified fabric. Employ Cisco's memory-expansion technology to increase memory footprint for virtualization and large-dataset workloads.

(Interior view)

UCS Network Adapters —Three types of adapters optimized for virtualization, compatibility with existing driver stacks, or high-performance Ethernet.

SOURCE: CISCO

Cisco says UCS can reduce IT infrastructure costs and complexity, help extend capital assets and improve business operations. UCS features a "wire once" unified data center fabric for single access to storage-area networks (SAN), network-attached storage and iSCSI platforms.

UCS provides as much as a 20% reduction in capital expenditures and as much as a 30% reduction in operational expenditures, Cisco says. It can provision applications in minutes instead of days, can be managed as a single system supporting more than 300 servers and thousands of virtual machines, and improves energy efficiency by reducing the number of servers, switches, adapters and cables by as much as 50%, which translates into lower power and cooling requirements.

The system also is intended to provide investment protection through "industry standards," Cisco says. At the same time, however, the company stressed its uniqueness in that each element — server, storage, networking and virtualization — is optimized for operation within UCS through patented techniques for memory expansion, management and fabric connection.

For the server element, Cisco designed its own computing system — the UCS B-Series blades — based on the future Intel Nehalem processor families, the next generation of Intel's Xeon processor. The Cisco blades offer patented extended memory technology to support applications with large data sets and allow more virtual machines per server, the company says.

Yet blade servers from other vendors — such as HP and IBM — and other individual elements may not be able to fully utilize these advances, Cisco officials suggested during the UCS launch.

"We're selling this as a system," said Rob Lloyd, senior vice president of Cisco Worldwide Operations. "It will be shipped and configured as a system. The innovations are all tied together. This is not a new blade server; it is a new architecture."

Cisco Marketing Vice President David Lawler added, "Other vendors' solutions will not work because [UCS is] a single unified system. And we're not developing blades for other [vendors'] platforms."

Therein lies Cisco's chief obstacle to gaining broad market acceptance and adoption of UCS: its inability to accept non-Cisco blade servers.

"The challenge will be around customers' organizational structures, customer buy-in," says Zeus Kerravala of the Yankee Group. "We've never seen them go after different customers before; they've always leveraged existing [customer] relationships."

While not pinpointing the blade server issue specifically, Cisco acknowledges it will have its work cut out for it in selling and gaining market acceptance for UCS.

"Cisco historically reacts to market transitions," Lawler said. "It takes people, in general, a while to understand that the model has changed. The proof is in the pudding of the early adopters."

Lawler said Cisco early on considered HP and IBM as blade server partners for the UCS system, and "did have conversations" with them about multiple technologies, such as unified fabric and the Nexus 1000V virtual switch, which is believed to be an element within UCS. But "a tighter binding [of the blade server] to the fabric necessitated a new development," Lawler said.

Service provider Savvis, which deploys HP and Egenera servers in its data centers, is beta testing UCS. CTO Bryan Doerr says Cisco is forcing other server vendors to look at alternative approaches to better integrating and virtualizing their devices with other data center components.

"What they've done is reintroduced the idea of the server and forced people to reckon with whether or not this style and subsequent need for virtualization capabilities are key to enabling a different style of service," Doerr says. "We have to continue to look at that solution vs. traditional solutions. There are clearly advantages."

Doerr adds, however, that Cisco's approach is not new — Egenera has been offering unified, virtual data center server computing for years. What's new is that the market has another big player — and that player is influential.

"The traditional [vendors] now need to take a look at this again, afresh and say,'do we believe there's a market for this platform built for virtualization; or do we feel that the current evolutionary path of the server in its current form is the one that's likely to win?'" Doerr notes. "I think their investment will follow that decision."

Competitors, predictably, took shots at what they view as the proprietary nature of UCS.

"Rather than keeping the components — servers, storage, networking, management — all with their own ecosystems and being individually improved by the various vendors, Cisco chose a proprietary way to integrate these things together," says David Yen, executive vice president and general manager of Juniper's data center business group. "It deprives [customers of] the ability to take advantage of the constant evolution and advancement in the server area, or the storage area, or in other software areas. The more you integrate, the more you tend to specialize."

On the server specifically, Yen says UCS locks customers in with a data center component that's typically a commodity and interchangeable between vendors.

"This is one reason why all of the modern data centers are all using the commodity 1RU/2RU x86 servers. These are high volume, low cost and interchangeable," Yen says. "They really facilitate the customer's ability in a cloud computing environment to very elastically, dynamically and efficiently utilize these resources. It creates a problem for the data center managers: Should I consider using Cisco's so-called unified computing module as my building block? It is so dangerous because then I'm completely locked into a single vendor."

Matt Zanner, worldwide director of data center solutions at HP ProCurve, says he had no insight into considerations or discussions Cisco may have had with HP on the blade server component of UCS. But he, too, was curious about Cisco's decision to develop that component internally and what it might mean for customers.

"If there are challenges using various standard, off-the-shelf components like servers in a given solution, that leads me to believe there are some control points being taken away from the customer and put in the hands of the vendor," Zanner says.

Consultant Pace Harmon is an adviser to Cisco customers. Principal Rahul Singh says he had input into the launch of UCS and suggested to Cisco that it partner for the system's blade server component.

"This is not something that Cisco's done in the past — trying to get into an already crowded market and displace vendors that people already have a significant amount of investment in and experience with," Singh says. "It doesn't make sense but folks at Cisco are used to selling hardware and boxes so it's almost a logical extension."

Other components of UCS, such as the fabric, will support a low-latency, lossless, 10 Gigabit Ethernet foundation. This is designed to consolidate three separate networks: LANs, SANs and high performance computing networks, Cisco says.

UCS also is designed to improve the scalability, performance and operational control of virtual environments. Cisco security, policy enforcement and diagnostics capabilities have been added into dynamic virtualized environments to support changing business and IT requirements, Cisco said.

For management, Cisco is rolling out the UCS Manager, a graphical user interface, command line interface and an API to manage all system configuration and operations. UCS Manager enables IT managers to collaborate on defining service profiles for applications, Cisco said.

Service profiles help to automate provisioning, providing application access in minutes instead of days, Cisco said.

The Cisco UCS and associated services will be available in the second quarter of 2009. More details on the system, including pricing, will be disclosed in April, Lloyd said.

In addition to Savvis, Cisco says it has nine other beta sites for the platform. ■

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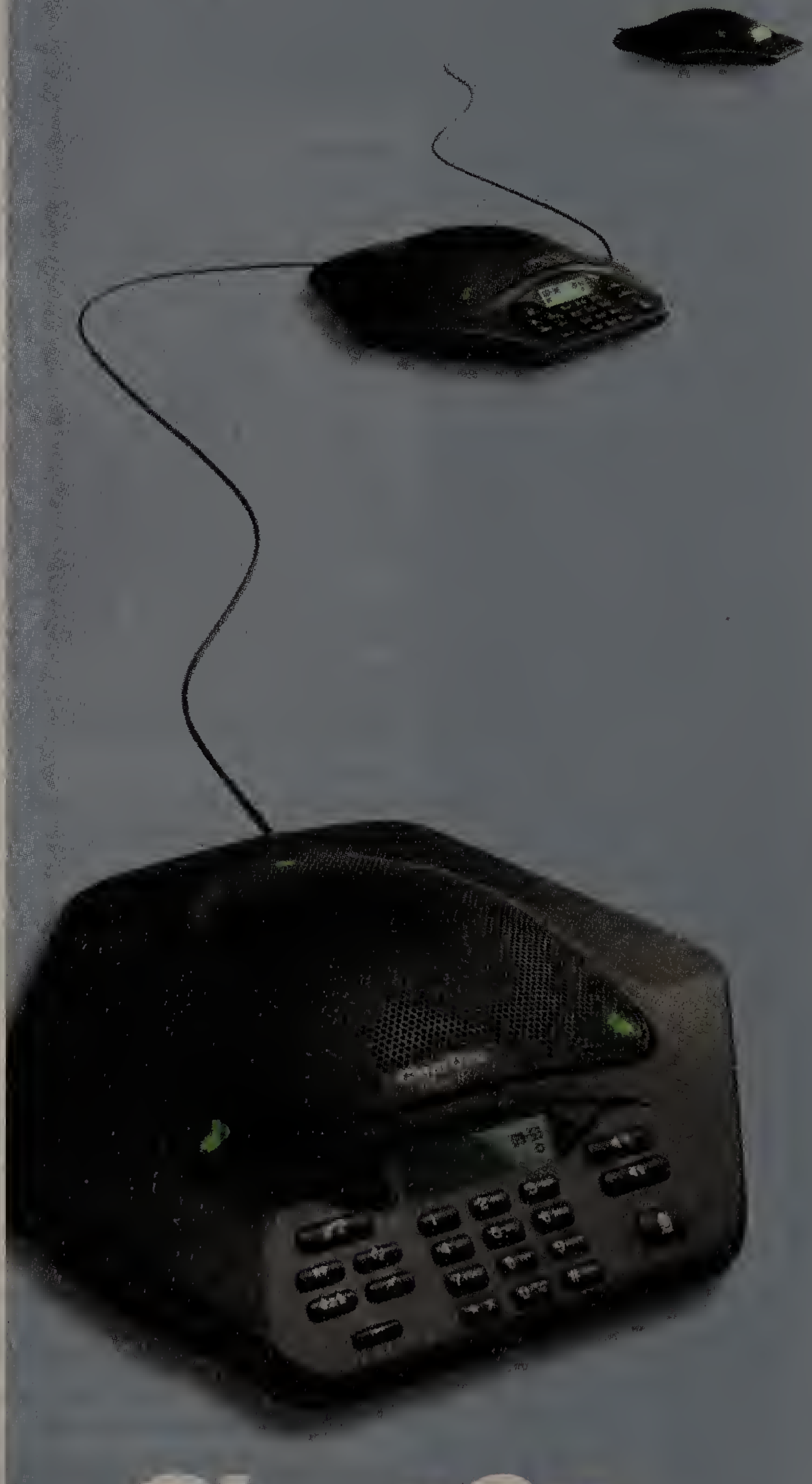

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Computer science major is cool again

U.S. undergraduate majors rise 8.1%, first increase since 2000

BY CAROLYN DUFFY MARSAN

The number of computer science majors enrolled at U.S. universities increased for the first time in six years, according to a Computing Research Association study released last week.

The Taulbee Study found that the number of undergraduates signed up as computer science majors rose 8.1% in 2008. Total enrollment in computer science classes — including majors and pre-majors — was up 6.2%.

U.S. tech industry heavyweights, computer science educators and CIOs hailed the news as a sign that IT is becoming more popular with teens.

"We've been seeing the number of computer science majors going down, and we've been partnering with universities to try to reverse that and get more high school students interested in the field," says Yvonne Agyei, director of talent and outreach programs in Google's People Operations Department. "We're really excited to hear that the trend is going in the opposite direction."

CRA said the popularity of computer science majors among college freshmen and sophomores is because IT has better job prospects than other specialties, especially in light of the global economic downturn.

"We're seeing more jobs in the field, especially at the undergraduate level. Computer science is becoming a more interesting place to be," says Peter Harsha, director of government affairs with the CRA. "When you compare the demand for jobs with the production of computer science undergrads, we're way short. It's clear there's an opportunity here."

Another reason for the growing interest in computer science degrees is teens' excitement about social media and mobile technologies.

"The perception that computer science is cool is spawned by all the interesting things on the Web. The iPhone and Web 2.0 reinforces the excitement, and that attracts the best students," Harsha says.

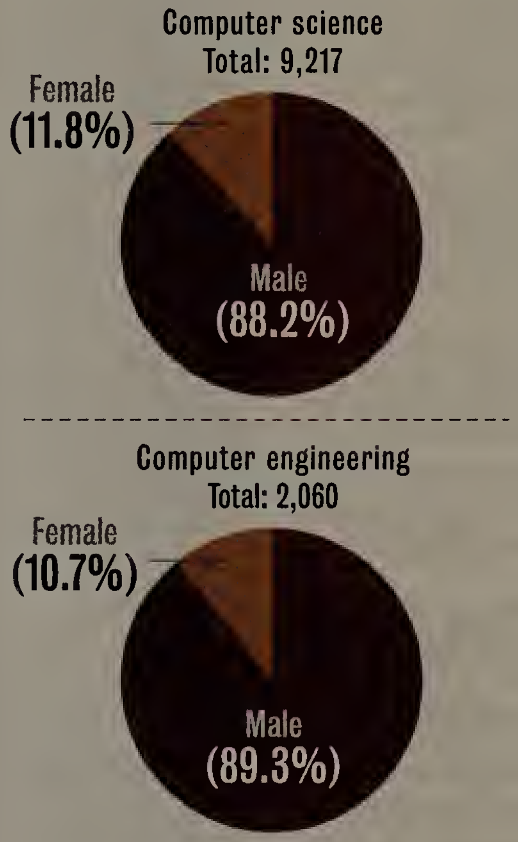
"There's definitely a coolness factor," says Professor Michael Heath, interim head of the Department of Computer Science at the University of Illinois at Urbana-Champaign, which has seen its enrollment rise 15% in each of the last two years. "People are involved in computers in an unprecedented way... There's a more human dimension to computing than there has ever been before, so that's causing computing and IT as a career to appeal to a wider variety of people."

The university reports more interest in computer science courses among non-majors, too, many of whom are opting for a new Informatics minor.

For example, Carnegie Mellon University received 2,600 applications for 130 freshman openings in its computer science department for next fall, said Professor Peter Lee, head of the department. The applications were up 11% from last year and down only slightly from a peak of 3,000 received in the late 1990s.

Gender breakdown

Males vs. females among computer science and computer engineering graduates.



SOURCE: COMPUTING RESEARCH ASSOCIATION

"We limit our enrollment to 130 new freshmen, so we never had an enrollment dip here at CMU," Lee says. "The quality of the applications is up. We're seeing some pretty amazing kids. Of the 2,600 applications we received, 600 to 800 of them deserve to be here."

Harsha says computer science majors are critical for the U.S. economy because their training provides them with computational thinking and problem solving skills that they can deploy in any industry.

"IT has been the main driver of innovation in the economy for the last 15 to 20 years," Harsha says. "Ceding that leadership in IT innovation is absolutely what the U.S. cannot afford to do if we want to stay globally competitive."

The number of computer science majors at U.S. universities began a precipitous decline after the dot-com bubble burst, dropping by half from 16,000 in 2000 to 8,000 in 2006. The number of co-eds pursuing computer science degrees held steady around 8,000 for the last two years until it began climbing again this year..

"The primary reason for the downturn in computer science majors was the erroneous fear that everything was being outsourced to India, which we know is not true," says Professor Jerry Luftman, executive director of the School of Technology Management at Stevens Institute of Technology in Hoboken, N.J.

"If you take a look at the number of jobs that are going offshore, it's a small percentage of IT jobs," Luftman says. "We know that companies are identifying more opportunities to leverage IT, which is going to increase the demand for IT professionals. If you take into consideration the number of Baby Boomers nearing retirement, the number of available IT jobs will far exceed the pipeline of students that are going to be available."

Stephen Pickett, past president of the Society for Information Management and an auto industry CIO, says the decline in computer science majors has been a "big problem." That's why SIM's local chapters have been working with nearby universities to enhance the computer science offerings in business programs.

"We feel that without a strong bench in IT — and college students basically form the bench — we may not be seeing a problem tomorrow but we will be seeing a problem long term," Pickett says.

Pickett says the demand for IT workers will continue rising. "Somehow, we need to energize these students to become more interested in technical degrees or business degrees with a technical flavor," he said.

The lobbying group TechAmerica says computer software engineering and computer systems design are the fastest-growing high tech jobs, even in the fourth quarter of 2008.

"The latest unemployment numbers for 2008 for computer software engineers is 1.6% . . . That's beyond full employment," says Josh James, director of Research and Industry Analysis with trade association TechAmerica. "Computer programmers' unemployment rate has gone up from 2.5% in 2007 to 3.7% in 2008. That's a sign that programming skills are easier to do from anywhere in the world. But the high-growth jobs include skills that are hard to send abroad such as systems integration and IT managers."

The demand for tech jobs may rise further because of the Obama Administration's stimulus package, which could create nearly 1 million new tech jobs.

One area that didn't show improvement in the latest Taulbee Survey is the number of women pursuing computer science degrees, which held steady at 11.8%

See Graduates, page 30

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Skype takes aim at businesses again

BY TIM GREENE

Skype is making its second run at corporate business with a service that lets its peer-to-peer VoIP clients interact with existing IP PBXs, and this may be just the start of a larger push.

The attraction would be the low international phone rates that Skype charges users of its VoIP client as well as the integration of phone calls as elements of Web pages, the company says.

The new service, called Skype for SIP, went into beta last week, with a full rollout due later this year. It requires that customers already own Session Initiation Protocol (SIP)-based PBXs configured to interoperate with SIP gear in Skype's own network.

Skype says it plans to announce more business services throughout the year, including Skype certification training for business telecom staffers. It would teach them to configure SIP gateways to be compatible with Skype's network and recommend corporate infrastructure that could enhance Skype's performance.

The company also plans to launch a help desk for business customers via a third party.

Last fall the company launched its Skype for Business division that rolled out its first offering, Skype for Asterisk, an integration of Skype's client with the open source Asterisk PBX to enable use of the client as a softphone in Asterisk deployments.

In combination with new Skype clients for mobile handsets, the services may make business inroads as a way to save money on calling among workers that travel and work outside the office, says Rebecca Swensen, an analyst with IDC. "This is the next logical step if they want to be aggressive in the business market," she says about Skype for SIP.

Initially Skype business services will be most attractive to small businesses that are driven by possible costs savings, she says, and they may actually turn all their calling over to Skype. But larger corporations that require service-level agreements (SLA) with guaranteed uptime and concerns about security almost certainly will not.

However, those larger corporations may be willing to turn over some of their calling to Skype as a way to drive down the cost of certain classes of calls and perhaps reduce the size of contracts with their traditional service providers, Swensen says.

If Skype can reduce the cost of mobile calls between, say, the sales force and headquarters by avoiding cellular roaming charges, it may win corporate customers, she says. The best-effort nature of Skype's peer-to-peer networking model may make these same businesses shy away from Skype for handling calls with customers.

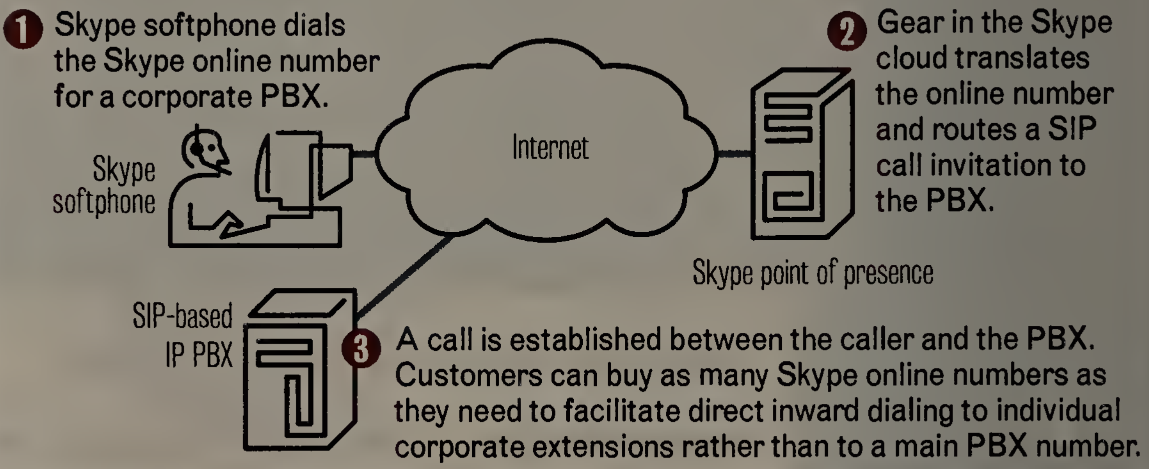
"Just because there are no SLAs does not mean Skype won't be attractive to larger enterprises," Swensen says. "It just means they're not going to rely solely on Skype."

Skype for SIP could be used to support click-to-call buttons on corporate Web sites, for example, where visitors to sites whose machines have a Skype client could be connected via SIP over the Internet to a corporate PBX. The PBX would then route the call to a contact center where an agent could provide more information.

To enable Skype for SIP, Skype is installing servers in its network that make the translation between proprietary Skype signaling and standards-based SIP. The call setup and the media packets that carry the conversation also go through the Skype gear, the company says.■

Skype calls PBXs

Skype for SIP service allows Skype softphones to connect with corporate PBXs that are Session Initiation Protocol-enabled, creating an opportunity for businesses to save money over traditional carrier services



① Skype softphone dials the Skype online number for a corporate PBX.

② Gear in the Skype cloud translates the online number and routes a SIP call invitation to the PBX.

③ A call is established between the caller and the PBX. Customers can buy as many Skype online numbers as they need to facilitate direct inward dialing to individual corporate extensions rather than to a main PBX number.

A search is launched for Conficker's first victim

BY ROBERT MCMILLAN, IDG NEWS SERVICE

Where did the Conficker worm come from? Researchers at the University of Michigan are trying to find out, using a network of Internet sensors to track down the "patient zero" of the virus.

The university uses so-called darknet sensors that were set up about six years ago to keep track of malicious activity. With funding from the Department of Homeland Security, computer scientists have united to share data collected from sensors around the world.

"The goal is to get close enough so you can actually start mapping out how the spread started," says Jon Oberheide, a graduate student who is working on the project.

That's not an easy job. To find the minuscule clues that will identify the victim, researchers must sift through more than 50 terabytes of data, hoping to find the telltale signatures of a Conficker scan.

One of the ways that Conficker moves about is by scanning the network for other vulnerable computers, but it can be tough to spot it for certain, Oberheide says. "The hard thing is to find the exact Conficker scanning activity, because there is a lot of other scanning going on."

Tracking down patient zero has been done, however. In 2005, researchers tracked the 2004 Witty worm's first victim, (pdf) a U.S. military base, and even identified the European IP address used to launch the attack.

It's been years since anything as widespread as Conficker has surfaced, however, so there have not been many similar chances.

When Conficker first appeared in October, though, researchers caught a break. Other worms had dodged this kind of analysis by blocking the darknet IP addresses, but Conficker's authors didn't do that. "We were surprised that it did this completely random scan, and didn't blacklist our particular sensors," Oberheide says. "If they'd done a little bit of research, they could have discovered our [network]."■

What will unleash mobile VoIP?

WiMAX, LTE could play big role, as could security improvements

BY BRAD REED

By all rights, mobile VoIP sounds like an enticing proposition for a lot of companies. After all, what enterprise wouldn't jump at the opportunity to save money on its mobile phone bills by sending wireless calls over an IP network rather than a cellular network? But despite this attractive premise, mobile VoIP technology has yet to evolve to the point where users can simply switch on their phones anywhere and expect to connect to a secure IP network.

The obvious reason is because mobile VoIP devices rely on Wi-Fi technology, which can offer quality voice service but has limited range and is prone to coverage gaps that make it problematic as a voice technology. These factors have so far limited mobile VoIP offerings to office or home environments where workers can securely connect to local hotspots to get a dedicated voice channel. But Stan Schatt, an analyst at ABI Research, says these in-office, in-house technologies have not matured to the point where they can properly support more complicated applications such as conference calling.

"I have talked to some enterprises that are using [mobile VoIP providers] Skype or Truphone and the problem they've told me about is that there are times when the services levels aren't where they want them for conference calls," he says. "When you've got a wireline VoIP connection, you've got a gigabit of bandwidth. When you do it over Wi-Fi you obviously have a lot less."

So what will it take for mobile VoIP to become popular across enterprise networks? One answer is more bandwidth. With so many carriers upgrading to technologies such as WiMAX and Long Term Evolution (LTE) over the next couple of years, the bandwidth available for mobile voice services will increase significantly. Irwin Lazar, an analyst for Nemertes Research, says despite the fact WiMAX services are commercially available now, broader mobile VoIP adoption may have to wait until Verizon and AT&T launch LTE services in two years.

"WiMAX is starting to fall off the radar because of WiMAX provider troubles," he says. "What you may find with LTE is that the data services will be fast enough to support mobile VoIP. Once LTE becomes a reality, most enterprises say that's where they expect their services to head. You'll see that more than you'll see Wi-Fi."

Gartner analyst Tole Hart says using LTE to route voice calls through an IP network is attractive to carriers because it will put less strain on cellular networks. However, he says even though carriers are planning to have their first deployments of LTE up and running in two years, it will take a while for LTE to become prevalent enough for enterprises to really invest in using it for mobile VoIP.

Mobile VoIP sampler

What different service providers offer

Skype Mobile: Free calling to other Skype users; rates for calls to non-Skype users start at 2.1 cents per minute; monthly subscriptions start at $2.95 per month; $9.95 per month for unlimited calls to landlines in 26 different countries; available on Windows Mobile and Android phones.

Truphone: Calls to other Truphone users are free; two major pricing options for calls to non-Skype users: one that has no monthly charge and costs 5.1 cents per minute and one that costs $4 per month and charges 2.1 cents per minute; works on Nokia E- and N-Series devices, BlackBerries, the iPhone and on Android phones.

JAJAH: Free calls to other JAJAH users; rates for calls to non-JAJAH users start at 2.9 cents per minute; Web-based service that routes calls first to a local number and from there sends them over IP; available for any phone that uses a Web browser.

"Initially you'll have about 30 cities with LTE coverage, so it will only be in certain areas," he says. "When the networks build out in five years' time, you'll see a lot more adoption of mobile VoIP." But even with more mobile VoIP options on the table in the future, Gartner projects that mobile VoIP traffic will account for less than 5% of all mobile voice traffic through 2012. However, Gartner says that carriers can't afford to overlook the potential of mobile VoIP, as "the emergence of more free VoIP services... will attract people using mobile VoIP on a casual basis."

Fernando Egea, the director of solution architecture for Alcatel-Lucent, says pressure from independent mobile VoIP providers could make life difficult for carriers, which don't want to be in the position of supporting their competitors' voice services on their own data networks. This market pressure, Egea says, could lead to major changes in how carriers price their cellular minutes.

"The carriers have to ask themselves, 'How do we make money by supporting Skype and Truphone over our networks?'" he says. "It's possible that voice could become free in the future and that carriers would make their money instead off of mobile data."

Improved wireless networks are only part of the equation for making mobile VoIP an enterprise fixture. Another key will have to be security, because sending voice calls through IP leaves them open to the same vulnerabilities as other kinds of Internet traffic.

"There doesn't seem to be a general concern about security for mobile VoIP yet," Schatt says. "People don't necessarily think of mobile VoIP in the same way they think of their other IP services, and they aren't as worried about [distributed denial-of-service attacks] against voice services or about spammers that could target VoIP and send robotic voice messages over IP networks."

Schatt says many of the mobile VoIP security products on the market are similar to AirMagnet's VoFi Analyzer, which is primarily focused on QoS, and Motorola's AirDefense Enterprise, which focuses on securing enterprise wireless LANs but that doesn't specialize in protecting mobile VoIP traffic. And although most mobile VoIP security solutions are capable of encrypting voice traffic, Schatt says this won't be enough once more threats to mobile VoIP emerge.

"You have to take the same safeguards with mobile VoIP as with wireline VoIP," he says. "But it's even more critical because you are dealing with less available bandwidth." ■

Acquisition

continued from page 1

"The companies have a similar view of the cloud," says Pund-IT analyst Charles King. "Frankly, both IBM and Sun are basically plumbing suppliers for IT. They're very much focused on the infrastructure offerings."

Sun's Sparc hardware and customer relationships with telco companies could help IBM be the infrastructure provider of choice when it comes to building new cloud platforms. IBM and Sun have both stressed the importance of openness in the cloud, and could use their combined might to promote interoperability among cloud services.

"I see a company [IBM] that is trying to say 'we'll collaborate with Amazon and Google and all of the vendors out there who have cloud capabilities,'" says analyst Judith Hurwitz of Hurwitz & Associates. "I don't see them trying to say 'we're going to replace Amazon.' … I do think you're going to see them focus a lot on interoperability, and private clouds."

- **Servers.** Cisco's entry into the blade server market was bound to cause some reaction among competitors. Could IBM's rumored purchase of Sun be the first response? In any case, a combined IBM/Sun company would be formidable in the hardware markets. IBM owns 36% of the worldwide server revenue market share with nearly $5 billion in fourth-quarter sales, according to IDC. Purchasing Sun would give IBM another $1.2 billion in quarterly revenue and raise its market share to more than 45%. That would give IBM more share than HP and Dell combined. The three companies together would account for 85% of the server market. One long-term question: Will IBM urge Sun's Sparc customers to migrate over to servers based on IBM's Power processors?

- **Storage.** Acquiring Sun would give IBM a significant boost in the external disk storage system market. IBM grabbed 15.7% of worldwide market share in the fourth quarter, down from 17.7% year-over-year, IDC says. Buying Sun would push IBM over the 20% mark but still leave it short of EMC, which is sitting pretty with 23.3% of market share. Purchasing Sun also would eliminate IBM's biggest competition in the high-end tape storage market. But some analysts question whether it's even worth buying Sun, which has seen its external disk storage market share plummet.

- **Virtualization.** IBM invented virtualization decades ago when the mainframe was king, and has gained commercial success more recently with a hypervisor for its Power-based servers. IBM has resisted building a hypervisor for x86 processors. That product gap could be filled with Sun's xVM hypervisor for x86-based systems, but given xVM's limited market reach IBM executives may not consider that a big deal. The hypervisor isn't all that exciting anymore — it's how you manage virtualization that's most important, Hurwitz notes. Both IBM and Sun have focused on partnering with hypervisor vendors VMware and Microsoft to enhance the capabilities of virtualized servers, Pund-IT's King says.

Potential for overlap

Pending a possible acquisition, IBM and Sun could be forced to make tough decisions about the future of various product families. Here's a look at some of the areas where products might overlap.

Servers

IBM: Mainframes, Power servers, System x (x86), BladeCenter

Sun: Sparc processor-based systems, x86 servers, Sun Blade servers

Storage

IBM: Various disk, tape, SAN and NAS products including the high-end DS8000 and XIV systems

Sun: StorageTek tape products, Sun Fire disk storage, Amber Road iSCSI appliances with flash memory

Database management systems

IBM: DB2

Sun: MySQL

Server virtualization

IBM: z/VM for the mainframe, PowerVM for Power servers

Sun: xVM for x86 machines

Operating systems

IBM: AIX for Unix, z/OS for the mainframe

Sun: Solaris for Sparc and x86 servers

Office suites

IBM: Lotus

Sun: OpenOffice.org

- **Competition with HP.** As mentioned earlier, IBM is already the king of server market share, ahead of rival HP, and acquiring Sun would give Big Blue a significantly larger numerical advantage. "From a competitive standpoint acquiring Sun would put IBM way ahead," King says. "I don't really see HP erasing or catching up against that for years, if ever."

- **Database overlap.** IBM and Sun are major players in the database management software market, with IBM producing DB2 and Sun acquiring open source MySQL a year ago for $1 billion. Acquisitions involving overlapping products are often cause for concern among customers, who in this case might wonder if IBM would stop supporting and updating the MySQL database. But IBM already supports multiple database management systems, partners with outside database vendors and is quite friendly to open source, according to software analyst Curt Monash. "There's little reason to think IBM would orphan MySQL or any other DBMS product," Monash writes.

- **Open source.** Sun has continually stressed the importance of open source software and uses phrases such as "open storage" and "open cloud" to describe its various product offerings. This transition may well be part of what attracts IBM to Sun. "Sun's deeper move toward open source and open standards under [CEO] Jonathan Schwartz is very resonant with what IBM is doing in the open source and open standards space," King says.

- **Java.** IBM could certainly be interested in having a bigger stake in the Java platform, which is largely controlled by Sun. "Java is important to IBM because it runs across all of the IBM servers, and it's a foundation for IBM's middleware stack (WebSphere for transaction-processing, IBM DB2 database, IBM Tivoli systems management framework) and Lotus Notes," says IDC analyst Jean Bozman. How the Java community would react to IBM ownership of Sun is another question. Rival Java vendors have spoken out against Sun's control of the Java platform, with some urging Sun to sever its ownership of Java and the Java Community Process, which helps dictate the future of Java by developing technology specs.

"IBM has been one of the major powers pushing for more openness in Java, so at first IBM taking control of Java would seem to bode well in that regard," writes Javaworld blogger Josh Fruhlinger. "But IBM has a definite interest in keeping Java open now because that lessens Sun's control over it. Once IBM owns the right to the Java trademarks — and once the Java universe doesn't have an outside power as big as IBM angling to keep Java open — things might get very different, very quickly."

- **Clash of cultures?** In terms of technology, IBM and Sun have more in common than they do in conflict, King says. But in terms of culture, Sun prizes innovation and "sometimes contrarian" thinking that may not mesh with the formal corporate world of IBM, King says. "A big challenge for IBM is to bring Sun and employees into the fold in a way that maintains that level of innovation Sun is well known for," he says.

- **Antitrust concerns.** If IBM and Sun agree to an acquisition, one industry group suggests that antitrust laws could prevent the deal from going through. The Computer & Communications Industry Association (CCIA), which has members including Microsoft, AMD, Google, Fujitsu, Yahoo and eBay, urges "careful extensive review by antitrust authorities."

"IBM and Sun have been fierce competitors for years. A merger would eliminate a key competitor, which affects choice and prices down the line on numerous IT products," CCIA president and CEO Ed Black says in a written statement.

Network World *Senior Editor Denise Dubie contributed to this report.*

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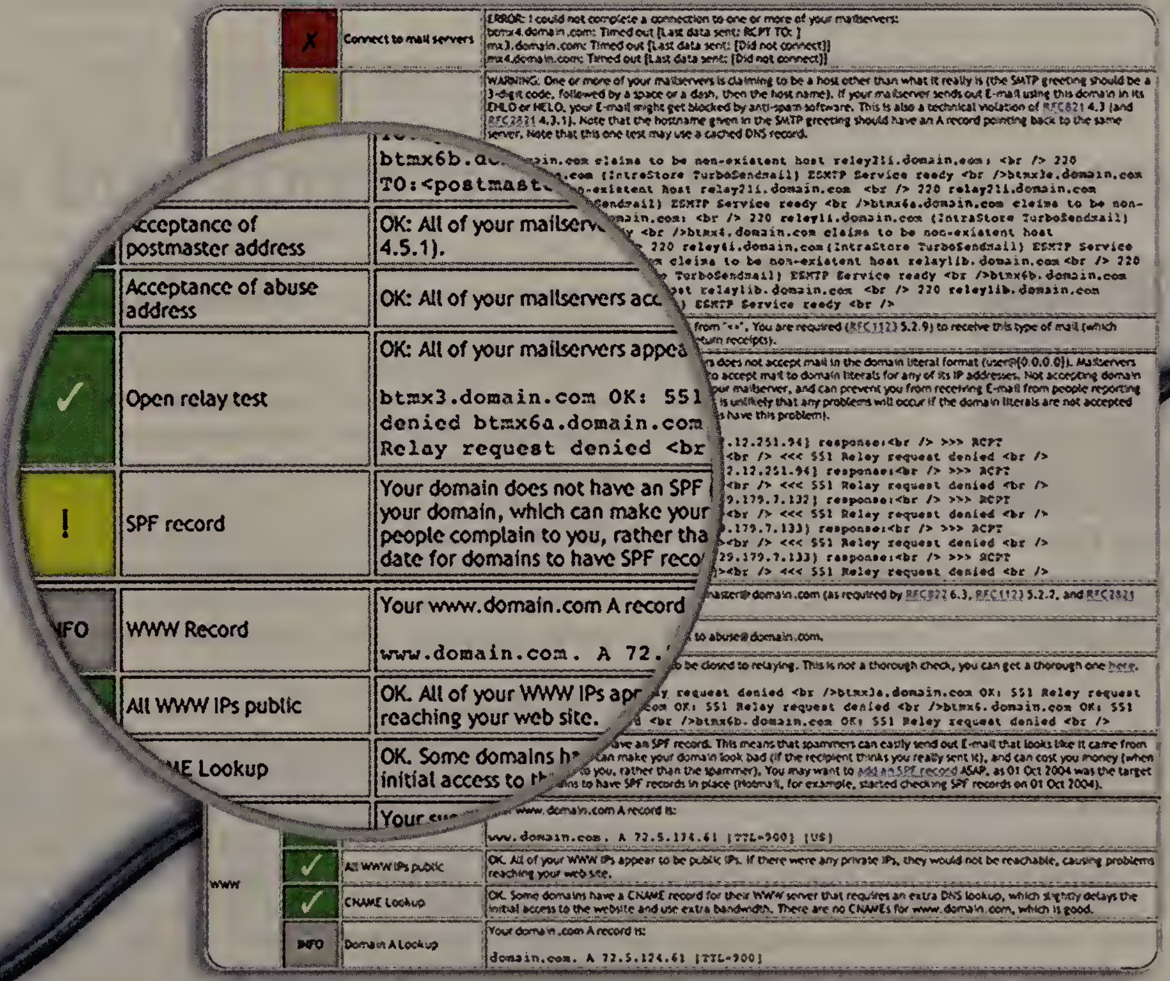

✗	Connect to mail servers	ERROR: I could not complete a connection to one or more of your mailservers: btmx4.domain.com: Timed out [Last data sent: RCPT TO:] mx3.domain.com: Timed out [Last data sent: [Did not connect]] mx4.domain.com: Timed out [Last data sent: [Did not connect]]
		WARNING: One or more of your mailservers is claiming to be a host other than what it really is (the SMTP greeting should be a 3-digit code, followed by a space or a dash, then the host name). If your mailserver sends out E-mail using this domain in its EHLO or HELO, your E-mail might get blocked by anti-spam software. This is also a technical violation of RFC821 4.3 (and RFC2821 4.3.1). Note that the hostname given in the SMTP greeting should have an A record pointing back to the same server. Note that this one test may use a cached DNS record.
	Acceptance of postmaster address	OK: All of your mailserv… 4.5.1).
	Acceptance of abuse address	OK: All of your mailservers acc…
✓	Open relay test	OK: All of your mailservers appea… btmx3.domain.com OK: 551 … denied btmx6a.domain.com … Relay request denied <br …
!	SPF record	Your domain does not have an SPF … your domain, which can make your … people complain to you, rather tha… date for domains to have SPF reco…
INFO	WWW Record	Your www.domain.com A record … www.domain.com. A 72.…
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Digital healthcare brings opportunities, risks

RISK & REWARD
Andreas Antonopoulos

Healthcare in the United States is going digital, which brings both tremendous opportunities and security risks. Digital healthcare brings the promise of increased quality of care, reduced errors and reduced cost and overhead in the provision of care. Yet the United States lags other countries in the use of technology in healthcare records. Fewer than 10% of hospitals and 16% of doctors use electronic health records. This is about to change.

The stimulus act (American Recovery and Reinvestment Act of 2009) contains a Title IV entitled the Health Information Technology for Economic and Clinical Health Act. The government has included more than $19 billion in direct funding as well as enticements (carrot) and regulatory controls (stick) in this part of the bill. It is likely that more healthcare reforms and digitization efforts will follow both in the general budget and in specific healthcare bills in the near future. On the technology innovation and vendor side an enormous amount of money is being poured into development of technologies and standards around Electronic Health Records (EHR). There is also a high likelihood of new tax incentives pushing for the use of EHRs in the provision of care.

All of this points to an explosion of technology in healthcare and more specifically in the digitization of medical records. With increased digitization, new privacy regulations and more integration between different provider systems bring new risks and an increased burden of regulatory compliance. For security professionals in healthcare this all represents both a tremendous opportunity for skills and career development and a whole load of new responsibilities and work.

Let's face it: a lot of the privacy and security we enjoy with respect to our medical records is not just a result of the Health Insurance Portability and Accountability Act — it is a result of the enormous inconvenience imposed by mounds of paper. You can't hijack a fax transmission as easily as a file server. You can't steal all the records in a single sweep when they're in file cabinets, not file servers. Inconvenience buys us privacy. If medical records get digitized and standardized, encoded and transmitted then all of that inconvenience goes away. If we're not careful our privacy goes with it.

The benefits of healthcare digitization far outweigh the risks in my opinion. Not only can you expect an enormous reduction in cost at each point of care, you can also get enormous benefits from the exploration and aggregation of health information for clinical and epidemiological studies. But there is the rub, the problem word in the previous sentence: aggregation. Once records are digitized the incentives to aggregate and statistically analyze them are enormous. The potential societal benefits of statistical analysis revealing the efficacy of treatments, the impact of genes or environmental circumstances, the performance of individual doctors or hospitals are incredible. So aggregate we will, and if we don't carefully control our data we will end up with an epidemic of privacy violations to add to our epidemiological studies. With great power comes great responsibility. Regulators, healthcare providers and security professionals will have to rise to the task — the benefits are too great to pass and the risks too horrible to ignore.

Antonopoulos is a senior vice president and founding partner at Nemertes Research, an independent technology research firm. He can be reached at andreas@nemertes.com.

Keep an eye on smart grids and sensor nets

EYE ON THE CARRIERS
Johna Till Johnson

Part of being a professional pundit is having the ability — real or imagined — to "see around corners." That is, to predict with some degree of accuracy that which hasn't been invented yet.

So what's next? The next big thing in my crystal ball is something I'm calling "instrumenting reality": Using the networking and processing capabilities we've developed over the past 25 years to manage, control and modify the real world.

Some context: The big revolution in the 1980s was all about computing power — getting more of it via Moore's law, and putting it ever closer to users via the development of minicomputers and desktop PCs. The big revolution in the 1990s and the early part of this decade was networking — harnessing that computing horsepower to create, in effect, a vast distributed computing system.

With networking came the ability to create virtual reality — a new way to interact with each other and with machines in the virtual world. Web browsers, search engines, blogs, wikis and Twitter are all richer and more powerful ways to interact in the virtual environment.

The next big revolution, though, isn't about doing more in virtual space.

It's about making the leap from the virtual world to the real one by developing the tools and technologies to use in the virtual world to better manage and modify the real one.

Take smart grids, which have gotten a lot of airplay recently (not to mention $11 billion in stimulus funding). Essentially, smart grids are power distribution networks that use built-in monitoring and distributed control systems to more efficiently and reliably deliver energy.

Another example is sensor networks. Getting real-world feedback from the environment — whether it's weather data transmitted directly from the air and ocean, or traffic data from the streets — lets us use the virtual world to better interact with the real one. We can more accurately predict the course of a hurricane, or take an alternate route home from work to avoid congestion.

Telemedicine's yet another example — the ability for physicians to use network-enabled robots to conduct surgery from thousands of miles away.

Closer to home, there's the notion of facilities instrumentation — using the data center to control and manage all aspects of facilities, from security to energy efficiency.

Consider this scenario: An employee decides to come to work in the middle of the night to work on a promising new idea. As she drives up to the corporate office gate, it detects an authorized entrant and swings open. Streetlights in the parking lot light up in sequence, illuminating a pathway to the building. Meanwhile, in the employee's office, the PC is booting up and the virtualized desktop image is loaded. The coffee machine begins to perk. By the time the employee arrives in her office, everything's humming away and ready to go.

The bottom line? We ain't seen nothing yet. The past 25 years have been merely a prelude to the networking revolution that's about to forever change our definition of "reality."

Johnson is president and senior founding partner at Nemertes Research, an independent technology research firm. She can be reached at johna@nemertes.com.

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The convergence of SIEM, log mgmt.

BY DOMINIQUE LEVIN

Though Security Information and Event Management and log management tools have been complementary for years, the technologies are expected to merge.

SIEM emerged as companies found themselves spending a lot of money on intrusion detection/prevention systems (IDS/IPS). These systems were helpful in detecting external attacks, but because of the reliance on signature-based engines, generated a large number of false positives.

The first-generation SIEM technology was designed to reduce this signal-to-noise ratio and help surface the most critical external threats. Using rule-based correlation, SIEM helped IT detect real attacks by focusing on a subset of firewall and IDS/IPS events that were in violation of policy. Traditionally, SIEM solutions have been expensive and time-intensive to maintain and tweak, but they solve the big headache of sorting through excessive false alerts and effectively protect companies from external threats.

While that was a step in the right direction, the world got more complicated when new regulations such as the Sarbanes-Oxley Act and the Payment Card Industry Data Security Standard mandated stricter internal IT controls and assessment. To satisfy these requirements, organizations are required to collect, analyze, report on and archive all logs to monitor activities inside their IT infrastructures.

The idea is not only to detect external threats, but also to provide periodic reports of user activities and create forensics reports surrounding a given incident. Though SIEM technologies already collect logs, they process only a subset related to security breaches. They weren't designed to handle the sheer volume of log data generated from all IT components, such as applications, switches, routers, databases, firewalls, operating systems, IDS/IPS and Web proxies.

With an emphasis on monitoring user activities rather than external threats, log management entered the market as a technology with an architecture to handle much larger volumes of data and with the ability to scale to meet the demands of the largest enterprises. As companies implement log management and SIEM solutions to satisfy different business requirements, they are also finding the two technologies work well together. Log management tools are designed to collect, report and archive a large volume and breadth of log data, whereas SIEM solutions are designed to correlate a subset of log data to surface the most critical security events.

If you take a look at an enterprise IT arsenal, you'll likely see both log management and SIEM. Log management tools often assume the role of a log data warehouse that filters and forwards the necessary log data to SIEM solutions for correlation. This combination helps optimize the return on investment while also reducing the cost for implementing SIEM. In these tough economic times it's likely we'll see IT trying to stretch its logging technologies to solve even more problems. It will expect its log management and SIEM technologies to work closer together and reduce overlapping functionalities.

Next-gen SIEM and log management

One area where the tools can provide needed help is in compliance. Corporations increasingly face the challenge of staying accountable to customers, employees and shareholders, and that means protecting IT infrastructure, customer and corporate data, and complying with rules and regulations as defined by government and industry.

Regulatory compliance is here to stay, and under the Obama administration, corporate accountability requirements are likely to grow. Log management and SIEM correlation technologies can work together to provide more comprehensive views to help companies satisfy their regulatory compliance requirements, make their IT and business processes more efficient and reduce management and technology costs in the process.

IT organizations also will expect log management and intelligence technologies to provide more value to business activity monitoring and business intelligence. Though SIEM will continue to capture security-related data, its correlation engine can be re-appropriated to correlate business processes and monitor internal events related to performance, uptime, capability utilization and service-level management. We will see the combined solutions provide deeper insight into not just IT operations but also business processes. For example, we can monitor business processes from step A to Z and, if a step was missed, we'll see where and when.

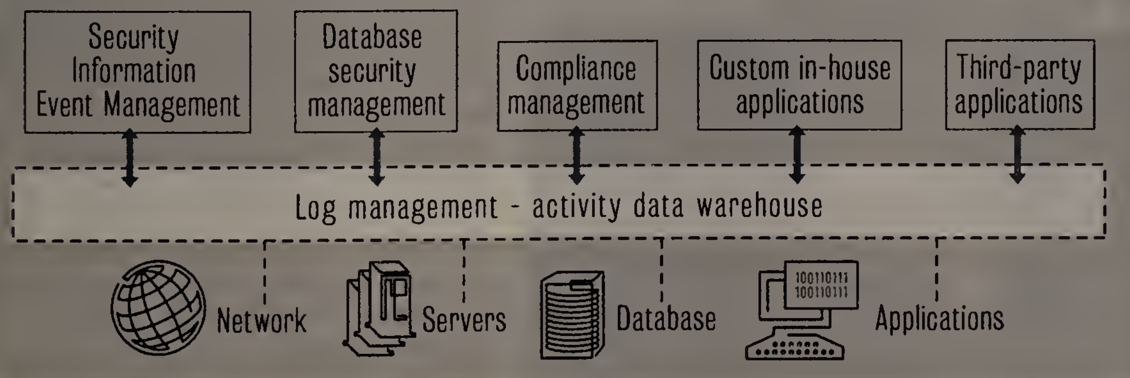
In short, by integrating SIEM and log management, it is easy to see how companies can save by de-duplicating efforts and functionality. The functions of collecting, archiving, indexing and correlating log data can be collapsed. That will also lead to savings in the resources required and the maintenance of the tools.

It gets even more exciting when you can apply log-based activity data and security-event-inspired correlation to other business problems. Regulatory compliance, business activity monitoring and business intelligence are just the tip of the iceberg. Leading-edge customers are already using the tools to increase visibility and the security of composite Web 2.0 applications, cloud-based services and mobile devices. The key is to start with a central record of user and system activity and build an open architecture that lets different business users access the information to solve different business problems.

Levin is executive vice president of strategy at LogLogic in San Jose.

Marriage of convenience: SIEM, log management and more

The central visibility provided by an open log management infrastructure can power a multitude of business use cases across security and performance management.


Security Information Event Management
Database security management
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Log management - activity data warehouse
Network
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This vendor-written tech primer has been edited by Network World to eliminate product promotion, but readers should note it will likely favor the submitter's approach.

GEARHEAD

Mark Gibbs

Aardvark solves my Gmail problem

This week I have a mystery that has been resolved but not explained. When the problem started I polled many very clever people but no one could give me an answer.

The mystery is this: I run Firefox 3.07 on OS X 10.4.11 to access Gmail. A few days ago I couldn't log in. I entered my user name and password and Gmail returned to the login screen without an error message or anything apparently amiss other than I was back where I started.

Oddly enough, I could log in from the same Mac using Safari 3.2.1, as I could using Firefox 3.0.7 on Windows XP SP2.

A friend suggested that the Firebug plugin could be the culprit as it sometimes causes problems, but although I had been using it I had disabled it for exactly that reason a few weeks before. In fact, in trying to figure out what was wrong I had disabled all of the Firefox add-ons on my Mac but nothing changed — I still couldn't log in. Even reinstalling Firefox didn't help.

Out of curiosity I tried to seek an answer using a new "social search" service (a search service combined with social networking) called Aardvark. The idea behind Aardvark is interesting. It makes finding answers a social crowdsourcing exercise by asking users who claim domain expertise to deliver the goods. You, in turn, answer questions the service routes to you.

When you join Aardvark you create a profile and select topics you would be willing to address. To ask a question you instant message Aardvark (AIM, Google Talk and Microsoft Windows Messenger are supported) and the service routes your query to a random user who claims expertise in the topic area.

The routing is determined by the service "intelligently" inferring context from your question. Aardvark IMs you when it dispatches your question and tells you what topic it thinks applies to your question. If you disagree you can respond with a follow-up IM containing "tag:" followed by the topic you believe your question is about.

So I tried asking Aardvark about my Gmail problem and within 10 minutes had an answer that solved my problem! The solution didn't explain what caused the problem other than identifying it as a configuration issue, but at least I can now log in to Gmail.

In case you're wondering, the advice was to exit Firefox, navigate to my user folder, then go to Library\Application\Support\Firefox. I then moved the Profiles folder and the file profiles.ini to my desktop, which removed all of my cookies and other configuration settings. When I relaunched Firefox I could log in to Gmail once again. Of course all of my other settings are history but even so, the solution was fairly painless.

Now, if one of you geniuses has an idea of what actually went wrong I'll be very impressed.

Aardvark is a promising idea and could turn out to be very useful. That said, I'm wondering if the service needs a way for users to rate the quality of answers to filter out the people who don't really know what they're talking about (I asked a question about philosophy and got a rather wishy-washy response from someone claiming to be a Ph.D. student specializing in computer ethics).

I have also answered questions myself and Aardvark promises to only send you a couple every day.

I'm giving Aardvark a provisional rating of 4 out of 5 — provisional because experience may well prove that the service to be more powerful than I'm giving it credit for.

Gibbs answers the scrawl of the wild in Ventura, Calif.. Your answers to gearhead@gibbs.com.

COOLTOOLS

RoadTrip-pin with the iPhone

The scoop: RoadTrip with SmartScan, by Griffin Technology, about $100.

What it is: The RoadTrip device combines an FM transmitter for playing an iPod/iPhone through your car stereo speakers with a car charger. The device also includes Griffin's SmartScan technology, which searches your "radio dial" for the three clearest broadcast frequencies, then puts them in as three presets (you have to turn your radio to those frequencies yourself). A flexible steel neck lets you position your iPod or iPhone into the dock as well as the car charger port, and a Line Out port is included if you have one of those fancier new cars with an auxiliary port (but then you don't need the FM transmitter).

Why it's cool: I've been looking for a way to enjoy the music on my iPhone and avoid having to listen to regular radio for a while (I discontinued the satellite radio service in my car, and abhorred having to return to "terrestrial radio"). With the amount of cool music services available on the iPhone (including AOL Radio, Pandora and the Slacker service), as well as my own playlists, I was looking for a device that would not only transmit content to the stereo speakers, but would recharge the device as well. The recharger is a key attribute, as accessing these music services requires a connection to the AT&T 3G network, which tends to drain the iPhone's battery. The SmartScan feature also is very nice, especially if you live in an area where it's tough to find a clear frequency not being used by a radio station.

I2i's portable speakers are easy to set up.

Some caveats: In my tests, I occasionally would get some static on these "clearer" frequencies, but it wasn't so bad that I needed to switch to another station. Also, you will need to use one of the custom dock inserts to fit your particular iPhone or iPod model to help prevent it from slipping (especially if your car ride is bumpy).

Grade: ★★★★★ (out of five).

The scoop: i2i Folding Portable Speakers, by Aerielle Technologies, about $40.

What it is: An iPod speaker system that is completely foldable and portable, these speakers slide out to fit different iPod models, and include a wired jack that connects to the music player's headphone port. The speakers are powered by four AAA batteries, and the system has an on/off switch to help save battery life. The speakers also can be powered by a 5-volt DC power adapter (not included). In addition to supporting music players, the speakers also work with the company's i2i Stream wireless audio devices.

Why it's cool: The small speakers are very portable and convenient for mobile workers who want to have some speakers with them while they travel, and setting them up is quite easy.

Some caveats: The sound from the speakers isn't extremely powerful, so I wouldn't expect that you'd hear music from these in a crowded or large room. But does provide some nice music in your office or in a smaller area.

Grade: ★★★★

Shaw can be reached at kshaw@nww.com.

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Analyze this: Low-cost wireless spectrum analyzers do the trick

Cisco, Fluke and AirMagnet — all rooted in Cognio code — are top performers

BY C.J. MATHIAS, NETWORK WORLD LAB ALLIANCE

While it's seldom necessary (post-installation, anyway) to test the physical-layer behavior of a wired LAN infrastructure, the same cannot be said for wireless LANs. Many elements, including fading, antenna orientation and traffic congestion, can impact the quality of a connection on a moment-to-moment basis. And there's always the possibility that external sources of interference, many unrelated to Wi-Fi but sharing the unlicensed bands in which Wi-Fi devices operate, will cause PHY-layer problems ranging from difficult-to-evaluate transient performance hits to an outright disruption of communications.

But fear not: just as it's possible to analyze IP at Layer 3 and Wi-Fi protocols at Layer 2 (see our test of Wi-Fi capture and analysis tools at www.nwdocfinder.com/9121), it's also possible to capture, visualize and analyze the energy present at Layer 1, thereby identifying, characterizing and even localizing sources of interference.

And, as this Clear Choice test proves, you can do all that without having to drop $20,000 on a spectrum analyzer intended for design and manufacturing engineers and required for use in commercial troubleshooting applications until just a few years ago.

In this test, we looked at seven products designed for WLAN spectral analysis in enterprise environments. Three that are based on Cisco's Spectrum Expert came out on top (Cisco sells it's own version while Fluke Networks and AirMagnet built their products on an OEM technology from Cognio, which Cisco bought in 2007), with an excellent combination of functionality, performance and ease of use at a price that won't put much of a dent in ever-tightening IT budgets.

With the tools from these three vendors, we found it simple and intuitive to evaluate, identify and interpret traffic in both the 2.4GHz and 5GHz bands. To be fair, all of the products we looked at addressed the challenge with differing degrees of functionality and ease, and a couple of those pull that off at bargain basement prices.

We highly recommend that enterprise WLAN installations of all sizes have access to a spectral-analysis tool, both for pre-installation radio frequency sweeps and post-installation troubleshooting when interference is suspected.

Categorizing spectrum analyzers

Spectrum analysis usually requires hardware that is separate from a radio designed for communications, because radio chips designed for Wi-Fi are almost always dedicated to networking and are seldom capable of serving as wideband receivers. A receiver in a spectral analysis application must be able to capture energy independent of protocol, making its services complementary to both wireless networking and the capabilities of multi-function Wi-Fi assurance tools, such as those from AirMagnet and WildPackets.

All of the products we tested are hosted on Windows-based notebooks and handhelds with add-on sensor radios and software. The radios used for spectral capture range from older non-Wi-Fi frequency-hoppers to custom-designed sensors embedded in PC cards, USB dongles or larger packages attached to a mobile PC or handheld.

All of these products use software clients to analyze and display raw data and results. The biggest issue we found with most of these products lies in the sampling rate supported. Whereas a high-end spectrum analyzer will be able to display the energy in a large swath of spectrum in real time, these products sweep across the spectrum of interest usually at about a 1Hz rate.

Thus it may take a few minutes to gather enough data to give you a good look at what's happening in a given chunk of spectrum. So it's good practice to let an analyzer run for a while before attempting to interpret or analyze measurements, and to rely on heatmaps and other data of a cumulative nature rather than instantaneous readings for most decisions.

That said, all of the tools tested can do a credible job at evaluating spectral usage and in identifying potential sources of interference, the most common applications of spectral analysis in enterprise and related commercial settings.

The descendents of Cognio

Since it acquired low-cost spectrum analysis pioneer Cognio, Cisco has continued to sell Cognio's flagship application, Spectrum Expert. Bundled with a PC card sensor capable of covering the 2.4GHz and

NETRESULTS

Product	**Spectrum Expert**	**AnalyzeAir**	**Spectrum Analyzer**
Vendor	Cisco www.cisco.com/	Fluke Networks www.flukenetworks.com/	AirMagnet www.airmagnet.com/
Price	$4,260	$3,995	$4,000
Pros	Very robust functionality; easy to use; flexible.	Very robust functionality; easy to use; flexible	Very robust functionality; easy to use; flexible.
Cons	None	None.	Installation binds product to a specific PC.
Score	5	5	4.9

5GHz unlicensed bands, Spectrum Expert was the first PC-based spectrum analysis product to challenge traditional (and expensive) spectrum analyzers. Cognio established OEM agreements with a number of firms, and AirMagnet and Fluke continue selling versions of Spectrum Expert under those agreements. We tested all three products, and as might be expected, they are essentially identical in features (with the exception of Cisco's Wireless Control System [WCS] integration feature, replaced by a simple SNMP gateway in the other two) and performance.

It's important to note that these three products did not always yield the same results, however. Given variations in antennas and physical position, simultaneous measurements did vary. But using these tools in a production environment doesn't call for precise dB-accurate measurements — rather, what's needed is the ability to detect, categorize and localize interference, and all three of these products are excellent in those regards.

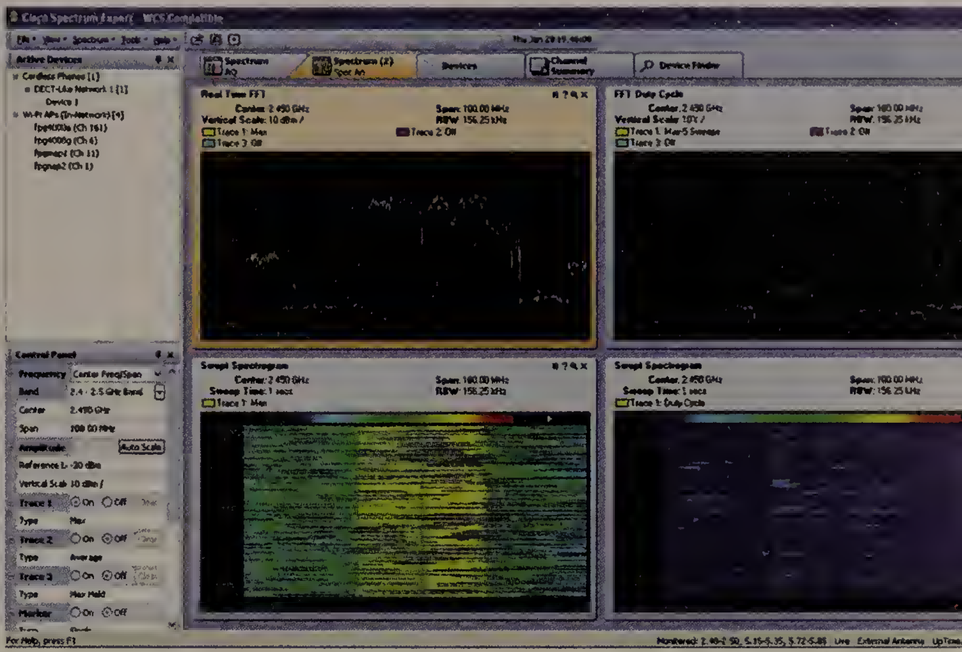
Cisco Spectrum Expert

We've been using Cisco's Spectrum Expert product since its origins at Cognio, and have found it to be a very useful tool at a very reasonable price (around $4,000). For this test we evaluated the latest hardware version (2.0) from Cisco, along with the latest software release (3.3.52). Spectrum Expert is easy to install (load the software and insert the PC-card sensor), and information is presented logically in multiple customizable tiled windows. A broad range of configuration possibilities exists, with each window being easily settable to display particular information via a simple menu system.

Core functions include a real-time Fast Fourier Transform (FFT) — used to convert gathered data to a useful frequency-spectrum display — FFT duty cycle, swept spectrogram, power vs. frequency, and power vs. time. Summary charts for channel utilization and interference power are provided, along with a detailed summary of statistics, including channel utilization, interference levels and SNR by channel, and classification and details of both Wi-Fi and non-Wi-Fi devices.

An important feature of Spectrum Expert can be configured for a wide range of customizable alerts, including performance (interference duty cycle), security, spectrum unitization and SNR, and many elements of channel utilization. The "device finder" feature can localize a source of interference, using the tool to guide a moving user closer to it. Finally, Spectrum Expert integrates with Cisco's WCS management console for detailed reporting, but local reporting options are limited to the active displays — not a major drawback given the typical, real-time use of these tools in practice.

A few minutes with the manual and/or the very complete online help facility are recommended, but this product offers a broad range of functionality in a very easy-to-use package, even for those with little background in spectral analysis.



Cisco's Spectrum Expert, the GUI for which is pictured here, is built upon the code Cisco picked up in its 2007 acquisition of Cognio. Fluke and AirMagnet — who both OEM the Congio code — offer up a very similar front end view.

AirMagnet Spectrum Analyzer

Substantially similar to the Cisco product upon which it is based, AirMagnet's entry will have special appeal to customers who are already using AirMagnet's various tools. Spectrum Analyzer suffers from the installation complexity we noted in our review of the packet capture and analysis capabilities in the company's Wi-Fi Analyzer product (www.nwdocfinder.com/9137), although the fact that we'd already registered with AirMagnet simplified matters somewhat. Beware, though, that the installation process binds the product to a particular PC, which may not be convenient in every case.

Apart from that, though, this product works identically to the Cisco version of this product.

Fluke Networks AnalyzeAir

Fluke's product also is based on the Cisco technology, and the functionality is almost identical. Installation is easy, and there are two antennas: the same dipole that Cisco and AirMagnet use, plus a directional antenna. A clip for both is included, but it mounts permanently to the notebook, which may not be convenient for some. As a consequence we used the PC card's internal antenna, which proved to be more than sensitive enough for our testing. Installation was simple and straightforward.

Wi-Spy DBx/Chanalyzer	**Bumblebee**	**Yellowjacket Tablet**	**AirSleuth-Pro**
Metageek http://metageek.net/	Berkeley Varitronics www.bvsystems.com/	Berkeley Varitronics	Nuts About Nets www.nutsaboutnets.com/
$799	$3,100	$8,500	$395
Great value, excellent range of function.	Self-contained, integrated, calibrated product.	Self-contained, integrated, calibrated product.	Inexpensive, good range of function.
User interface could be easier to navigate.	Relatively limited range of capabilities.	Heavy, bulky, relatively expensive.	No 5 GHz. support, UI needs work.
3.95	**3.75**	**3.75**	**3.4**

SCORECARD

Action	Features	Ease of use	Documentation	Installation/ configuration	Total
Weighting	55%	30%	10%	5%	
Cisco's Spectrum Expert	5.0	5.0	5.0	5.0	5.0
Fluke Networks' AnalyzeAir	5.0	5.0	5.0	5.0	5.0
AirMagnet's Spectrum Analyzer	5.0	5.0	5.0	3.0	4.9
Metageek's Wi-Spy DBx/Chanalyzer	4.0	4.0	3.0	5.0	3.95
Berkeley Varitronics' Bumblebee	4.0	3.0	4.0	5.0	3.75
Berkeley Varitronics' Yellowjacket Tablet	4.0	3.0	4.0	5.0	3.75
Nuts About Nets' AirSleuth-Pro	3.0	4.0	3.0	5.0	3.40

Scoring key: 5: Exceptional; **4:** Very good; **3:** Average; **2:** Below average; **1:** Subpar or not available.

Fluke offers a broad range of products using this technology, in various combinations with other capabilities and even in the form of a stand-alone hardware version. So, as is the case with AirMagnet, those already using or planning to use Fluke tools will prefer this edition.

Moving on to the other analyzers tested, they can be divided into tools aimed at either the low- or high-end of the market. Products from Metageek and Nuts About Nets fall in the former category while tools from Berkeley Varitronics Systems (BVS) fall into the latter.

Metageek Wi-Spy DBx

The DBx is the latest in a line of inexpensive Wi-Spy spectrum analysis USB dongles from Metageek, dating back to the original $99 product of a few years ago that many (including us) purchased on impulse. The DBx is the first Wi-Spy product to cover the 5GHz (5150-5850 MHz) bands, which are of increasing importance with 802.11n deployments and the availability of low-cost dual-band Wi-Fi access points and adapters. The DBx is very easy to use — install the Chanalyzer 3.2 software from the Web, insert the dongle, and you're off.

Metageek's Chanalyzer application is geared towards casual users. Three key "views" are presented: spectral, which shows energy over time; topographic, which displays waveforms by frequency ("popularity" indicated by color); and planar, which shows instantaneous, average and maximum energy by frequency.

Recording and playback are supported, with the ability to save data to files if desired. Switching between 2.4GHz and 5GHz, or filtering by channel, however, involves entering center-frequency and bandwidth numbers (or an obscure right-click), which is inconvenient. It would be nice to be able to select specific bands or channels with a more obvious metaphor. The manual isn't really a very good tutorial, but it will get a user started.

One very clever feature is the ability to display sample waveforms with a tool to overlay these on live data, making it easier to classify a Wi-Fi signal or an interferer of any form. We used this feature to discover that an access point we thought we had set to 802.11n with a 40MHz. channel was in fact operating in 802.11b mode, a typical problem one might encounter. Overall, Chanalyzer's user interface needs work, but Wi-Spy DBx is a great entry-level product that could serve even in larger enterprises.

Nuts About Nets AirSleuth Pro

AirSleuth Pro defines the low end of notebook-based spectrum analyzers today. At only $395 (with even less expensive — and less capable — versions available), this product, which is available in both USB and PC card versions, will get you basic 2.4GHz (no 5GHz capability is included) analysis. The hardware is old Proxim HomeRF (PC card) and Symphony (USB) adapters. Stifle those snickers, after all, these are being used only for detection, not communications, and their radios are more than serviceable at providing the data needed for basic spectrum capture and analysis functions. Setup was straightforward; load the software, reboot, install the driver, enter a registration code when it starts up, and you're off. No manual is provided, but a useful, if limited, help capability is available on the Web.

As might be guessed by the use of the off-the-shelf radios, responsiveness and resolution for this product were both lower than those of the other products tested — it's best to let this tool run for a while before evaluating any reported data. Still, AirSleuth Pro does a credible job of showing instantaneous energy in the 2.4GHz band, along with a heatmap of energy over time.

An interesting feature is an analysis of the "best" Wi-Fi channel, determined by cumulative energy sensed in each channel over time. This might be useful in very small installations, but would likely not help in larger deployments where the 1-6-11channel allocation is almost universally (but perhaps not optimally) applied. Another interesting facility is a network discovery capability, listing sensed Service Set Identifiers by channel, signal strength and quality and traffic density.

We weren't crazy about the user interface (the dynamic re-scaling of some views made it hard to focus on the data), but there's an impressive array of functionality available here, especially considering the price. If only AirSleuth Pro could deal with the 5 GHz. bands, this product would have scored higher.

Berkeley Varitronics Systems (BVS) Bumblebee and Yellowjacket-B/A/N/G

BVS has been building mobile spectrum analyzers of many forms for quite some time, and today offers a broad product line covering both WLAN and wireless WAN technologies. The WLAN products are various editions of the Bumblebee (based on an HP iPaq hx2790c running Windows Mobile 5 with attached custom electronics), and the Yellowjacket-Tablet, which is based on the Samsung Q1 UMPC.

In both cases, the computer is connected to an external radio sensor via a custom bracket and cables. The result is somewhat bulky, and the Yellowjacket even comes with a pole to support the unit during extended use. Hand and shoulder straps are also provided, but we're not sure

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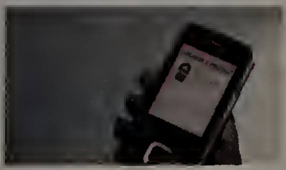

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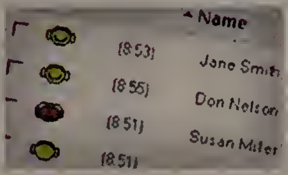

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WLAN
continued from page 26

that casual enterprise users will be happy with the form factor of these products — they are not really comfortable to carry around. To be fair, notebook computers aren't really an improvement here. The BVS products come in rugged (and large) flight cases with a wide array of accessories and available options, including directional antennas for improved sensitivity.

The included documentation isn't well organized and is somewhat cursory, perhaps reflecting the intended more-sophisticated audience. But a few instructional DVDs are included, correcting for this inadequacy to some degree.

Bumblebee is certainly a highly portable package, but the small screen (and compact user interface) and relatively slow scan rate limit the benefits of the form factor. Still, there's a lot of function once one becomes familiar with the user interface. Arbitrary swaths of spectrum or individual channels can be scanned. Cumulative spectrograms and histograms of energy can be displayed. And it's possible to export captured data to a separate application on a PC for more detailed analysis.

The Yellowjacket application has a decidedly DOS feel to it, and is not very intuitive to use. Zooming in on specific channels and detailed device information are both available; recording and playback are supported, but many features are difficult to find. Once they are, though, there's an amazing amount of information available when examining a single media access control address including RSSI over time, delay spread, multipath analysis, traffic analysis and more — but, again, getting to all of this isn't obvious.

The interference analysis capability is similar to that in Metageek's Chanalyzer, but nowhere as convenient to use. In short, there's a lot here, but with a relatively steep learning curve. On the plus side, this is the only product with built-in GPS, making it a good choice for outdoor applications.

And the winner is...

All of the products tested could serve the needs of enterprise network planners, for pre-installation RF sweeps, and network operations staff for troubleshooting and ongoing analysis. All discovered the devices we set out as interferers (access points, cordless phones and a microwave oven), with varying reports of specific signal strength. We were pleased to discover that the continuous video stream usually on in the office generated surprisingly little traffic, and thus interference, to others on Wi-Fi Channel 11.

But picking a winner is tough because of the large range of prices and capabilities represented in the products tested. If we had to pick just one, though, we'd go with Cisco's Spectrum Expert. It's robust, flexible and useable by those with little background in traditional spectrum analysis — in other words, by enterprise installation and support staff. AirMagnet users might want to purchase its version of this product, as it integrates with other AirMagnet tools. Fluke also provides a number of implementations of this functionality, including a standalone wireless version of their EtherScope Series II Network Assistant. At any rate, the functionality in the Cognio descendents is rich and makes spectral analysis a breeze in enterprise settings.

But it's fair to point out that the entry price for all of the above is more than $4,000, including a PC, so that may direct some users to the two low-end tools reviewed here. Both are quite useable, but the responsiveness, 5GHz coverage, and interference analysis tools in the Metageeks product gives it the nod. They also have a 2.4GHz-only product (Wi-Spy 2.4x) that sells for $399.

The BVS products will appeal to those who need spectral-analysis functionality every day. They're designed for continuous (and even outdoor) duty, and these products are rugged, calibrated test equipment. The range of function and ease of use, however, was somewhat disappointing. While the price of the Yellowjacket is fairly high relative to the others tested, keep in mind that a PC of some form is also required for the other tools. The out-of-the-box, ready-to-go nature of the Bumblebee and the Yellowjacket will be attractive to many — but an update in user interface, especially for the Yellowjacket, should be in the works here.

Mathias is a principal with Farpoint Group, an advisory firm specializing in wireless networking and mobile communications. His blog, Nearpoints, resides at Network World. *He can be reached at craig@farpointgroup.com.*

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Days may be numbered for stand-alone spectrum analyzers

Spectral analysis can involve a significant investment in time and money, and the result is the availability of a tool that is carried from location to location as part of normal operations.

As is the case with enterprise-class Wi-Fi assurance tools, there is an emerging trend of integrating spectral-analysis capabilities directly into Wi-Fi infrastructure. This is the strategy being applied by Cisco with its Spectrum Intelligence solution and Motorola with its AirDefense Enterprise Spectrum Analysis solution. AirMagnet also has a version of its sensor packaged like an access point for distributed spectral analysis.

The advantages of this integrated approach are many: there is no need to purchase (perhaps several) mobile spectral analyzers; no need to send expensive talent on a foot race in search of interference; no need to train staff to recognize particular waveforms (due to centralized automation); and the advantages of having centralized 24/7 monitoring of potential spectral issues are obvious.

We believe that given ever-increasing traffic and the mission-critical nature of Wi-Fi in an ever-growing number of enterprises, that the network-centric, spectral-assurance strategy will eventually dominate, especially as competition heats up in this area and always-cost-conscious customers insist on network-centric, spectral-analysis capabilities.

We do not believe, however, that ever-greater levels of accuracy will be part of this vision. Enterprise-class spectrum analyzers need not be the calibrated test equipment used in product design, manufacturing, regulatory compliance, and similar high-precision engineering activities. All that's really required is the ability to identify interference and coverage problems, report these, and ideally take action in terms of automated network-management reconfigurations to address Layer-1 challenges as they are recognized.

Finally, we expect an increasing number of Wi-Fi chipsets to include raw energy output capability, broadening the number of devices that will be capable of spectral capture and analysis, and eventually even including client devices that evaluate (or at least report) spectral and other wireless-network conditions during otherwise idle time.

— C.J. MATHIAS

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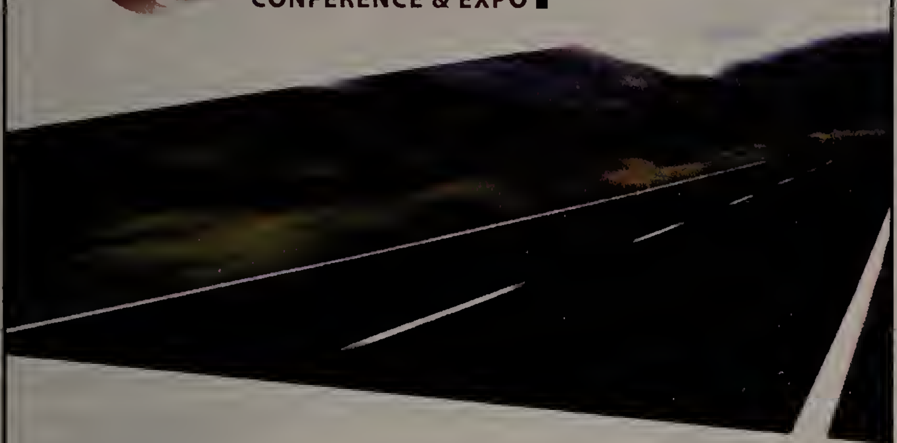

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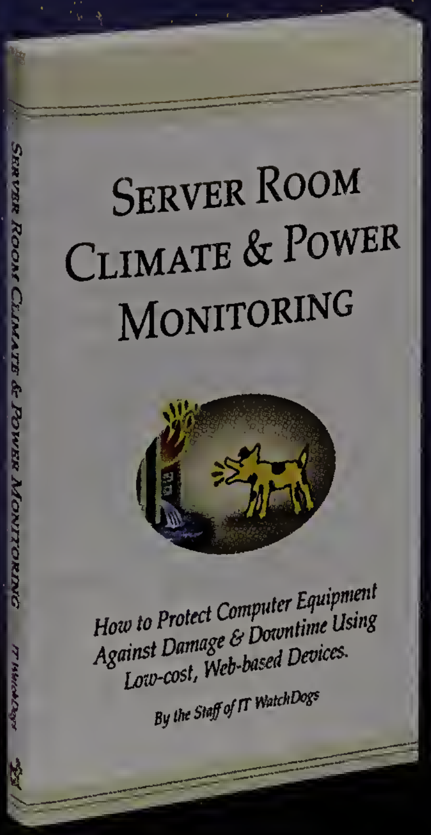
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Web directory start-up aims high

BY JOHN FONTANA

Directory start-up UnboundID has slipped out of stealth mode and introduced a scalable and high-performance platform aimed at handling the identity and personalization demands of Web-based services and mobile computing.

The UnboundID Directory Server, which is based on the Lightweight Directory Access Protocol V3, combines qualities found in directory and database technologies to create an identity platform for large service providers and corporate networks.

As part of the announcement, Alcatel-Lucent said it is using the UnboundID Directory Server as the foundation for its platform to support personalized Web 2.0 and communications services over wired and mobile networks. Alcatel-Lucent also has signed on to be the exclusive reseller of the technology to the telco industry.

UnboundID, founded by four former Sun employees, is built around the open source OpenDS directory code that the foursome developed at Sun. The founders — Don Bowen, David Ely, Stephen Shoaff and Neil Wilson — have added specialized extensions to the code to improve its scale and performance, defining their commercial product.

The software is part directory, with such features as replication and high-volume data reads, and part database, including notifications and alerts. The result is a directory that can offer high-speed data retrieval and updates and transaction-like access to that information in real time.

Staking its claim

"It appears they are carving out a part of the [directory] market at the high end dealing with massive scale and extreme performance requirements," says Gerry Gebel, an analyst with the Burton Group. Gebel says the needs to meet those requirements go well beyond the telco industry. "Historically that is the segment that has dealt with those requirements, but as identity on the Internet becomes more prominent and more prevalent then you are going to see similar Internet properties that have similar scale and performance requirements."

Gebel says those properties would be similar to an AOL, eBay or PayPal that can have hundreds of millions of entries in their directories. "As they try to expand the services they offer or connectivity to different application services on the Internet, then some of these performance requirements are escalated," he says.

UnboundID developed the software with the thought that directories used for large scale identity and personalization services would need to not only quickly read information but also write new information or update existing information, such as refreshing a user's whereabouts as they move from cell tower to cell tower during a phone call.

Company executives say the directory can handle more than 50,000 searches and 10,000 updates, or writes, to the directory per second.

Unbound ID gives users the ability to talk to the directory like they would talk to a database. In addition, the directory supports the database concept of triggers, which can alert administrators that disk space is shrinking or provide users with an alert if their password is about to expire.

The platform also uses directory replication to provide redundancy and performance benefits that can't be had with just a database.

Another directory technology used to speed performance is the ability to update the directory with attribute changes that are only made when needed by a specific user. Conversely, database updates must immediately change every single record to include the new information whether it is needed or not.

"We can provide in some cases up to an 80% reduction in storage, a 3-5X reduction in the amount of memory that is used and supply the equivalent of a 3-5X read/write performance increase," says Bowen, cofounder and vice president of marketing for UnboundID.

While the directory is the first product from UnboundID, the company plans to offer a suite of software, including migration tools that will let users run their existing systems in parallel with UnboundID or cut over in one move. The company also will provide synchronization between identity repositories.

The company plans to push the technology to cloud providers, which could offer identity services for authentication and authorization to disparate online applications.

UnboundID Directory Server will be priced on a per instance, per server pack and via enterprise licensing. A directory with less than a million entries would start at about $150,000 to $200,000. ■

Graduates

continued from page 14

The data also is skewed towards white and Asians, with little representation from African Americans, Hispanics and Native Americans. More than two-thirds of computer science students are white, the survey found.

"Diversity turns out to be a difficult problem," Harsha concedes. "We've had a lot of strong efforts in this space… But the Taulbee Survey data says we're kind of static. The increase in enrollment is not coming from these minority populations."

Attracting women to the computer science field "continues to be a challenge," Google's Agyei says. "We're really passionate about changing that. We have scholarships for women and people from under-represented minorities to study computer science."

The number of Ph.D. candidates in computer science also rose 5.7% last year.

Carnegie Mellon University, for example, received 1,400 applications this year for 26 Ph.D. slots opening in the fall, Lee says. "It's completely crazy competition," he added.

Harsha says the CRA data showed that this year's newly minted doctorates may have a tougher time finding academic jobs because of hiring freezes at many universities, but that demand remains solid in the industry.

"Even on the Ph.D. side, as of the fall 2008, we saw only 1% unemployment," Harsha says. "So these folks are getting jobs."

The Taulbee Survey measures student enrollment in computer science and computer engineering programs at 264 universities in the United States and Canada that offer Ph.D.s. Data was gathered in the fall of 2008. ■

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BACKSPIN

Mark Gibbs

Becoming green or just greenish?

OK, OK. I know you're working on becoming "green" or you're at least thinking you'd better have a good story when the CEO decides he wants to mount the environmentally conscious hobby horse so he can ride it to the next shareholders meeting — but wait! What does being green really mean?

It seems that many people in the IT world (and the business world in general) treat being green as a pain in the butt rather than a serious responsibility. Just consider this sentence from an industry publication: "Going green doesn't have to be just an exercise in tree hugging. It can have a positive effect on your company's budget, too."

The reference to "tree hugging" is shorthand for "things that crazy hippies who enjoy drum circles do," while the conclusion about being good for your budget reduces the concept to, at best, basic self-interest. In other words, the sentiment is that being green is something that comes as a result of dropping a deep knee bend to mammon.

While there are indeed potential cost savings that can come from making environmental concerns part of your IT strategy, there's the bigger issue of doing so because it is the right thing to do.

Now, there's no doubt doing "the right thing" was traditionally a concept at odds with the focus of most corporations — to make profits. Most social and cultural values are distant runners-up in the list of corporations' concerns.

What's starting to change this attitude towards "greening" is evolving public sentiment and governmental pressure, and only the most arrogant corporations are willing to ignore the obvious social demand to be proactive about environmental responsibilities.

But much of what I'm seeing is just for the appearance of doing something — a program here and there. You might argue that is better than nothing, but here's my concern: the consequences. If, for example, you virtualize servers to save power but then go and buy PCs that aren't designed to be recycled, that's not really being green. It's that lack of analysis that's the problem.

A couple of years ago when the greening of IT was first becoming an issue I interviewed a hosting provider that shall remain nameless. This company's big pitch was it was really, really green. Company officials told me they purchased the power to run part of their operation through renewable energy credits — a scheme for purchasing electricity indirectly from renewable resources. OK, but that doesn't mean you are green, just that you are supporting a green initiative while you could still be squandering the power by using it inefficiently.

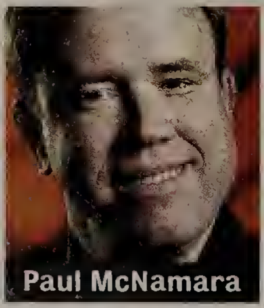
They also told me how their roof and car park were covered with solar cells which supplied the rest of their power needs. "Sounds good," I said, "but tell me, have you done a life-cycle analysis?"

What I wanted to know was whether they had factored in all of the products and services they used from acquisition to disposal so they could prove they were being realistically environmentally responsible. For example, had they considered the cost and environmental impact when the time came to dispose of their solar cells? Nope, so their green pitch was essentially meaningless.

It's this sort of birth-to-death analysis that determines whether you're serious and, once again, it's the difference between a tactical approach and a real strategy.

So is your company treating becoming environmentally responsible as a real strategy or through a set of disconnected tactics? Are you on the road to becoming green or merely becoming greenish?

Tell Gibbs the hue of your strategy at backspin@gibbs.com.



NETBUZZ

News, Insights, oddities

Celebrity Tweeting 'sparks kitchen fire'

It was only a matter of time before this Twitter madness leapt from merely hypnotizing the masses and bastardizing the language to causing real-world mayhem for those (like me) caught in its seductive clutches.

Here's what happened: Curt Monash, a technology analyst and *Network World* blogger, was twit-chatting at 1:30 a.m. with actor LeVar Burton — Lt. Commander Geordi La Forge on "Star Trek: The Next Generation" and Kunta Kinte on "Roots." For the fiery details we turn now to my Q&A with Monash, which Twitter users should note approvingly consists of questions and answers stretching no more than 140 characters, putting aside the windier blog excerpt. (We'll get to Burton's response below.)

Buzzblog: Please describe the sequence of events, beginning of course with telling us your Twitter platform of choice.

Monash: I still Twitter from the Web interface. Tweetdeck's data corruption is intolerable.

From a Monash blog post: "While I was tweeting away in the middle of the night, I heard a shout from my wife. It turned out that we had a fire on our 49-year-old electric stove. A burner had failed to turn off, a plastic cutting board had fallen onto it, and flames had started.... The fire left a small part of our house destroyed, a large part uninhabitable, and the rest uncomfortable. The insurance company happily feels obligated to set things to rights."

Buzzblog: So how would you rate Twitter's combustibility risk alongside those associated with, say, laptop batteries and indoor barbecuing?

Monash: Twitter is entitled to hum a few choruses of "We Didn't Start the Fire".

Buzzblog: How seriously do you see this fire hampering Twitter's ability to fashion its long-awaited revenue model and/or attract a buyer?

Monash: Any excitement could serve as a distraction.

Buzzblog: Given that tweeting with a celebrity ignited this blaze, should we all stick to Twitter nobodies from now on just to be safe?

Monash: You're confusing correlation with causality. Are you a chiropractor?

Clearly smoke inhalation had clouded the man's appreciation of how seriously he had been wronged here.

Even Burton recognized the legal peril — eventually — as evidenced by this reply he left on Buzzblog: "Although Mr. Monash did mention in a subsequent 'tweet' that there had been an incident, I had no idea the kitchen fire had caused that much damage. Although I AM very sorry that Mr. Monash and his family...

"Hold on.... My lawyer just stepped into the room.... He's instructed me to say the following: I have no knowledge of any blaze, inferno, conflagration or anything of the sort. I do not know Mr. Monash and in fact have never heard of him. Anything to the contrary is simply inflammatory and incendiary!"

At the very least, Twitter owes Monash a new kitchen.

Here's why print publications must endure

Last week's debut of an online-only Seattle Post-Intelligencer has been widely panned as a journalistic rearranging of the deck chairs and cited as yet another nail in the coffin of print-based news.

Piffle. Recently we had a few chuckles here at the expense of Google's new Tip Jar, an experiment that's designed to leverage "the wisdom of crowds" to save us money in our everyday lives. Here's a reply I received to that column: "This was very funny. It was the first time I've ever laughed while reading a magazine in the bathroom."

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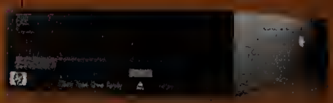

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